Reading Comprehension and Co-Teaching Practices in Middle School English Language Arts Classrooms

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Abstract

This study reports practices implemented in over 2,000 minutes by 16 middle school special education and general education co-teaching pairs in English language arts classes. We report the extent to which teachers integrated literacy activities that support reading comprehension, the co-teaching models used, and the frequency with which each teacher led instruction. We also report the types of grouping structures teachers used and the extent to which teachers interacted with students with disabilities. Finally, we report the types of text used. Observations revealed that more than half of time spent on literacy activities involved reading aloud or silently with no co-occurring literacy instruction that supports reading comprehension. Students with disabilities spent a majority of their time in whole-class instruction or working independently with little teacher interaction. Special education teachers spent most of their time supporting whole-class instruction led by the content-area teacher. Implications and directions for future research are provided.

Currently, schools are facing increased pressure to help students with disabilities (SWDs) meet rigorous achievement standards across the content areas (Every Student Succeeds Act, 2015; Individuals with Disabilities Education Improvement Act, 2004). In this effort, many schools place SWDs in the general education setting (i.e., inclusive classrooms) to provide access to the general education curriculum. At the secondary level, 58% of 12- to 17-year-old SWDs spend 80% or more of their day in the general education setting (U.S. Department of Education, 2011), and current estimates are that about two-thirds of SWDs receive instruction in general education for at least one content area—a practice that has increased in frequency over the past 25 years (McLeskey & Waldron, 2011; Newman, 2006; Wagner et al., 1991). This increase has been driven by the prioritization of general education curriculum access and

educators' belief that the general education setting is the least restrictive and most socially just placement (Artiles, Harris-Murri, & Rostenberg, 2006; Kennedy & Ihle, 2012) for SWDs. However, data continue to show that including students in content-area classes does not assure progress in literacy and content-area learning. In fact, the academic difficulties of secondary-age SWDs persist, particularly in literacy. On the 2015 National Assessment of Educational Progress,

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92% of SWDs in eighth grade could not read at a basic level (National Center for Education Statistics, 2015), and these dismal outcomes have remained stagnant for over a decade.

Indeed, the content-area setting can pose challenges for SWDs as literacy ability and content learning are closely linked (Greenleaf, Schoenbach, Cziko, & Mueller, 2001; Swanson et al., 2017). Therefore, although the implicit aim of increasing the percentage of time in general education for SWDs is to enhance achievement by providing them with the same curriculum and accountability standards as their peers without disabilities, placement alone is likely insufficient to guarantee desired outcomes. To ensure that SWDs succeed in the general education setting at the secondary level, all teachers must be skilled at integrating evidence-based content-area literacy instruction that supports reading comprehension (Boardman, Klingner, Buckley, Annamma, & Lasser, 2015; Deshler, 2005; Kamil et al., 2008).

Content-Area Considerations

The increasing number of SWDs in general education places more demands on content-area teachers (CATs). Consequently, CATs are faced with the tremendous challenge of (a) providing effective content-area instruction for SWDs and their peers (Carnegie Council on Advancing Adolescent Literacy [CCAAL], 2010) and (b) implementing evidence-based content-area literacy instruction that also accommodates SWDs (CCAAL, 2010). Bulgren, Graner, and Deshler (2013), for example, argued that content-area classes should include "high leverage learning strategies" (e.g., comprehension monitoring). Biancarosa and Snow (2006) suggested that typical middle and high school students should receive "approximately two to four hours of [daily] literacy instruction and practice that takes place in language arts and content-area classes" (p. 4). Authors of several previously conducted syntheses of adolescent literacy research (e.g., Biancarosa & Snow, 2006; Edmonds et al., 2009; Kamil et al., 2008; Lee & Spratley, 2010; Scammacca et al., 2007; Stevens, Park, & Vaughn, 2018) highlight the importance of including the following components of reading comprehension instruction into all content-area classes: background knowledge building, setting a purpose before reading, teaching essential words and concepts, teaching students to generate main idea statements and questions and answers with textual evidence, and providing students with an adequate amount of time reading text.

It is essential for CATs to integrate these types of literacy instruction using general features of effective instruction (e.g., maximizing opportunities to respond) to provide differentiated and intensive support for SWDs who are commonly included in these classes (Goldman & Snow, 2015; Vaughn, Wanzek, Murray, & Roberts, 2012). SWDs often require more intensive instruction and frequent teacher interaction compared to their peers without disabilities (Solis, Miciak, & Vaughn, 2014). Teachers can provide this support in a variety of ways, such as varying grouping structures (e.g., peer-mediated instruction) to promote more opportunities for students to respond and receive immediate corrective feedback (McKenna, Muething, Flower, Bryant, & Bryant, 2015). Providing multiple opportunities for students to practice and respond has been associated with enhanced student engagement (Haydon, Mancil, & Van Loan, 2009; Partin, Robertson, Maggin, Oliver, & Wehby, 2010) and improved student outcomes (Wexler, Reed, Pyle, Mitchell, & Barton, 2015).

What Are Typical Practices in Content-Area Classrooms?

Despite guidance provided by the previously summarized research base, authors of several recently conducted observation studies of literacy instruction in secondary content-area classrooms report that CATs infrequently integrate effective practices into their instruction (e.g., Swanson et al., 2015; Wexler, Mitchell, Clancy, & Silverman, 2016). For example, Swanson and colleagues (2015) conducted 137 observations in secondary social studies and English language arts (ELA) classrooms

to document typical vocabulary and comprehension instruction and time spent on text reading. The authors reported that although the CATs did some instruction to support vocabulary and comprehension, overall, they infrequently engaged students in text reading or comprehension strategy instruction. These findings align with another observation study recently conducted in secondary science classrooms (Wexler et al., 2016). In this study, authors observed 10 high school science teachers for 3,167 minutes, and results revealed that teachers rarely used expository text and implemented a minimal amount of vocabulary and comprehension strategy instruction. In addition, the authors reported that the science CATs most frequently utilized whole-class instruction and independent work, meaning they rarely varied their grouping structures.

Co-Teaching: A Promising Service Delivery Model?

In addition to ensuring that CATs are skilled at implementing content-area evidence-based literacy instruction in ways that support reading comprehension, schools can enhance support for SWDs in the content-area setting by ensuring effective school service delivery models are in place to promote such instruction. One commonly implemented although underresearched service delivery model at the secondary level is co-teaching (Magiera & Zigmond, 2005). Friend (2000) described co-teaching as instruction provided by a special educator and a general educator in the general education classroom designed to accommodate the needs of students with and without disabilities. It is popular because it should in principle increase the effectiveness of inclusion, reduce the student-teacher ratio, and ultimately improve student outcomes (Arguelles, Hughes, & Schumm, 2000; Murawski & Lochner, 2011). In theory, the CAT acts as the content expert while the special education teacher (SET) can reinforce critical reading skills to help SWDs access the content (Villa, Thousand, & Nevin, 2005).

Although there is limited research on the effectiveness of co-teaching in inclusive

settings (Magiera & Zigmond, 2005; Welch, Brownell, & Sheridan, 1999), some evidence suggests that when implemented effectively, co-teaching may hold promise for enhancing student outcomes (Manset & Semmel, 1997; Murawski & Swanson, 2001). To determine the overall effectiveness of co-teaching as a service delivery model in inclusive settings, Murawski and Swanson (2001) conducted a meta-analysis synthesizing studies from 1989 to 1999 to evaluate the impact of co-teaching on student academic and behavioral outcomes. Authors reported an overall moderate effect size (.40); however, with only six studies, the authors acknowledged a need for more research examining the effect of co-teaching on student outcomes.

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Despite the popularity and potential benefits of co-teaching, this model can be challenging to implement effectively due to a number of commonly experienced challenges (e.g., lack of training) and wide variation in implementation (Solis, Vaughn, Swanson, & McCulley, 2012). Several types of co-teaching models exist (e.g., team-teaching, parallel teaching, one teach–one assist; Murawski & Dieker, 2004). Although the literature does not recommend spending a specific amount of time on any one co-teaching model, the assumption is that students will benefit from models that capitalize on the expertise of both teachers (e.g., team teaching; Scruggs, Mastropieri, & McDuffie, 2007). Furthermore, certain co-teaching models allow SETs to play a strong instructional role in the classroom by allowing teachers to provide small-group, differentiated instruction (e.g., station teaching) rather than having one teacher dominate instruction while the other assists. For example, Bottge, Cohen, and Choi (2017) reanalyzed data from two randomized controlled trials that tested the effects of specialized instruction on the fractions computation performance of students in special

education resource rooms and inclusive co-taught math classrooms. Results demonstrate that SWDs in co-taught classrooms where the special educator shared responsibility for teaching outperformed SWDs in classrooms where the special educator taught little or no instructional content. The findings support the idea that having the SET play a meaningful instructional role in co-taught classrooms positively affects student outcomes.

Extant Data on Typical Practices in Co-Taught Classrooms

There are only a few studies that indicate how co-teaching pairs work together in classrooms in secondary schools, and most findings do not augur well for co-teaching. In one such study, Rice and Zigmond (2000) conducted a series of interviews and observations of co-teaching pairs in 10 secondary schools in Australia and Pennsylvania. Their primary finding—based on narrative notes—was that the SET mostly played a subordinate instructional role (e.g., one-teach, one-assist). Weiss and Lloyd (2002) used narrative notes to document the roles of six SETs in one middle school and one high school across 54 observations. They found that the SET mainly supported the CAT, team-taught with the CAT, or taught the same or different content in another room. Magiera and Zigmond (2005) used a time sampling procedure to investigate how the instructional experiences of SWDs in four middle school co-taught classrooms compared with the experiences of the same students in general education classrooms without co-teaching. Results indicated that the general education teacher interacted less frequently with the SWDs in co-taught classes and that teachers mostly provided whole-class instruction and had students work independently in that setting. Concerning literacy specifically, there is only one observation study by Zigmond (2006). Zigmond reanalyzed narrative notes from another study that focused on the literacy support provided to SWDs by eight co-teaching pairs in high school social studies classrooms.

Zigmond found that students spent a minimal amount of time reading and writing.

These findings are concerning. It appears that SWDs in co-taught classrooms spend a lot of time in whole-class instruction or working independently and get minimal attention from CATs. Even in the co-taught setting, SETs rarely lead whole-class instruction. And with regard to literacy, not much reading or writing occurs in these classrooms.

Dieker (2001) showed the characteristics of effective co-taught teams through observations, interviews, and teacher logs. Dieker reported that nine secondary-level co-teaching pairs were perceived to be effective because they (a) created a positive environment that included peer-mediated learning, (b) set high expectations for students, (c) allocated time to plan together, and (d) found ways to evaluate student progress. Unfortunately, it is not clear how characteristic these effective teams are of co-teaching pairs overall. What is clear is that the extant data on what occurs in co-taught classes are limited. There are few studies, and none are recent. Despite the growing use of co-teaching in secondary schools, the field remains unclear about what currently occurs in co-taught secondary-level classrooms, particularly in literacy.

Purpose and Research Questions

The primary purpose of the present study was to document co-teaching practices, with a particular emphasis on the literacy activities used to support the reading comprehension of SWDs in co-taught ELA classes. We selected this focus because (a) the most recent observation studies of co-teaching were conducted more than a decade ago, (b) no recently conducted studies have examined literacy activities to support reading comprehension of SWDs in co-taught ELA classrooms, and (c) literacy demands in ELA classrooms are high and using co-teaching service delivery models in these classes is common practice (Haager & Vaughn, 2013; Lee & Spratley, 2010; Murawski & Swanson, 2001; Porter, McMaken, Hwang, & Yang, 2011; Tobin, 2005).

Table 1. Participating District and School Demographics.

District	Region	Setting	Population	Race (%)				% P/A	% LEP	% FRL	% SPED
				White	Black	Hispanic	Other				
1	Mid-Atlantic	Urban	48,439	13	64	18	NR	48	11	76	15
2	Northeast	Suburban	3,328	91	2	1	7	43	2	33	12
3	Northeast	Urban	9,140	82	2	9	6	30	1	33	17
4	Southeast	Urban	82,000	31	45	20	4	39	15	73	12

Note. P/A = Proficient or Advanced on reading portion of state test in 2014; LEP = limited English proficiency; FRL = receiving free or reduced-price lunch; SPED = receiving special education services; NR = not reported by the district.

We addressed the following research questions:

Research Question 1: To what extent do co-teachers deliver evidence-based content-area literacy instruction that supports reading comprehension, and what roles do CATs and SETs play in this delivery in co-taught ELA classrooms?

Research Question 2: What grouping structures do CATs and SETs use in ELA co-taught classrooms?

Research Question 3: How frequently do CATs and SETs interact with SWDs in ELA co-taught classrooms?

Research Question 4: What co-teaching models (e.g., team teaching) do CATs and SETs use, and how frequently do CATs and SETs lead instruction in ELA co-taught classrooms?

Research Question 5: What types of text do CATs and SETs use in ELA co-taught classrooms?

Method

To address our research questions, we observed 16 middle school co-teaching pairs in ELA classrooms three times each ($n = 48$). Observation times ranged from 31 to 70 minutes, with a mean of 46 minutes ($SD = 9$). The co-teaching pairs served as a convenience sample, and we collected data over 5 months across two semesters.

Setting and Participants

The study took place in six middle schools across four states and four school districts in

the Mid-Atlantic, Northeast, and Southeast. See Table 1 for district and school demographics. Across sites, our sample included 32 total teachers from 16 co-teaching pairs in Grades 6–8 ELA classes. Thirty-one of the teachers were professionally licensed in their specialty area (i.e., ELA or special education). The teachers reported a range of 1 to 23 years of previous teaching experience, and 6 of the co-teaching pairs reported at least 1 year of previous co-teaching experience together. All teachers reported participating in limited professional development (PD; i.e., between 0 and 2 days per year in the previous 3–5 years) on co-teaching and literacy instruction. See Table 2 for teacher demographics. A total of 371 students were in the observed classrooms, with an average class size of 22 and a range of 15 to 26 students across all classes.

Target Students. During each observation, we selected one SWD—a student who had a reading goal on his her Individualized Educational Program (IEP)—as a target student on whom student domain data would be collected (see following section). The co-teaching pair and the observer preselected each target student immediately prior to the beginning of an observation. Because we were interested in the breadth of experiences of SWDs in the co-taught ELA classroom, observers and teachers selected a different target student for each observation.

Data Collection Procedures

Two observers conducted each live observation to prevent observer drift. We chose which class period to observe by asking each co-teaching pair to nominate one class period that contained

Table 2. Teacher Demographics (*N* = 32).

	n	%
Licensure status		
Professionally licensed	31	96.9
Not licensed for area	1	3.1
Highest degree obtained		
Doctoral	2	6.3
Master's	19	59.4
Bachelor's	10	31.3
Age		
20–29	11	34.4
30–39	8	25.0
40–49	9	28.1
50–59	3	9.4
60–69	1	3.1
Race or ethnicity		
White	24	75.0
Asian	1	3.1
African American	5	15.6
Hispanic or Latino	1	3.1
Other	1	3.1
Gender		
Female	21	65.6
Male	11	34.4

at least three SWDs. We then scheduled observation dates to capture information on typical practices in co-taught ELA classrooms and notified teachers of each observation date in advance, although some rescheduling occurred per teacher request (e.g., due to the occurrence of a field trip). We made every effort to evenly disperse the observations over the data collection period. The mean number of days between observations was 18, and observations took place from December through April. Twenty-one observations took place in the fall and 28 in the spring due to scheduling and because several pairs joined the study in the later part of the first semester.

Observers coded observations independently. One coder, randomly chosen prior to the observation by the observers, served as the master coder for an observation. Immediately following, observer teams compared their codes, calculated interobserver agreement (IOA), came to consensus on any discrepancies, and created a final code sheet using the master coder's code sheet to enter into the database.

Observation Tool. The authors developed an observation tool, Content-Area Literacy Instruction (CALI) Observation Tool (COT), to document practices implemented by co-teachers across three primary domains: academic, student, and teacher. Using a timer to prompt observers, we used a partial interval time sampling procedure, observing one of the three domains every 20 seconds. Observers also recorded types of text used during the observations. The COT was adapted from a literacy and content-area observation code sheet used in a previously conducted observation study by the first author (Wexler et al., 2016) as well as the Writing and Reading Observation Tool (WROT; Bryant et al., 2013), which was designed for secondary literacy settings. A copy of the COT and the codebook are available on request from the first author. We next describe the practices we coded in each domain on the observation tool.

Academic domain. Observers coded teaching practices in the academic domain during the first 20 seconds of each minute. All practices were coded as an occurrence if they occurred at least once during the interval. Thus, multiple practices in the academic domain could be coded during the same 20-second interval. We also recorded whether the CAT, SET, both, or some other instructor (e.g., paraprofessional) implemented any of the practices included on the observation instrument. If the class was split into stations or small groups, coders recorded the practices for the SWD's group. Minutes in the academic domain could be coded as *literacy activities* (including *literacy instruction* and *text reading*), *noninstruction*, or *other instruction*. Each of these is defined next.

We coded literacy activities including time spent on text reading (i.e., whether students and the teacher read aloud or silently) and instances of evidence-based content-area adolescent literacy instruction that supports reading comprehension, namely, instruction recommended by the Institute of Education Sciences (IES) Adolescent Literacy Practice Guide (Kamil et al., 2008) and several other recent guidance documents, seminal adolescent literacy syntheses, and meta-analyses (e.g., Biancarosa & Snow,

2006; Edmonds et al., 2009; Lee & Spratley, 2010; Scammacca et al., 2007; Wexler et al., 2015). We coded literacy instruction and text reading independently—thus, they could co-occur or be observed alone (e.g., students reading without co-occurring literacy instruction). Observers coded instances of these types of instruction if the CAT, SET, both, or some other instructor explicitly linked the instruction to text students read or would be reading (e.g., providing background about a text they were about to read).

Observers recorded four types of literacy instruction. Background knowledge instruction included instances of displaying a picture or object, video, or other activity that related to a text being read to engage students' prior experiences, add to student knowledge, or address prerequisite skills or knowledge. Observers also coded instances of evidence-based content-area vocabulary instruction. Specifically, observers recorded occurrences of the CAT, SET, both, or some other instructor providing definitions or examples, teaching students how to use context clues or morphological awareness, or giving visual or physical examples to convey word meaning. We also recorded teachers' use of pre-reading strategies (i.e., setting the purpose or previewing text). We coded instances of reading comprehension strategy use—cases where evidence-based comprehension strategies were taught by the teacher or practiced by the students. This included instruction on getting the main idea or summarizing texts and teacher questioning. The latter included instances of teachers prompting students to generate questions while reading, modeling how to ask and answer questions, or asking specific questions requiring textual evidence from students.

We coded any interval in which an activity occurred that was not specifically linked to text as other instruction (e.g., introducing a vocabulary term but not explicitly linking it to text). We also coded instances as noninstructional events when no instruction was occurring or when teachers managed behavior.

Student domain. Observers coded practices in the student domain during the second 20 seconds of each minute. For this domain, we coded instruction based on the experience of the target SWD. Therefore, if the CAT and SET were engaged in two different activities with different groups of students, we coded only the practices involving the target SWD. Specifically, we coded the grouping structure (i.e., independent, pair, small-group, whole-class) and teacher or some other instructor (e.g., paraprofessional) interaction with the SWD. We recorded an interaction if any adult spoke to the SWD about a matter directly related to instruction, and we included instances where one or both teachers were interacting with the whole class. We coded instances of whole-class instruction if the teacher was leading instruction and all students were doing the same thing using the same materials. Observers coded instances of small-group instruction if the target SWD was working with anything more than a pair but less than the whole class. Observers coded pairs if the SWD was working with one other student and independent if the SWD was working on his or her own.

Teacher domain. Observers coded practices in the teacher domain during the last 20 seconds of each minute. In this domain, we coded occurrences of common co-teaching models (Cook & Friend, 1995). Some of these models required one teacher to lead the instruction while the other teacher assisted (i.e., one teach–one assist), monitored student progress without directly interacting with students (i.e., one teach–one monitor), or collected specific information on students (i.e., one teach–one observe). The other models required teachers to share teaching responsibilities (e.g., team teaching). For three of the common co-teaching models (i.e., one teach–one observe, one teach–one assist, one teach–one monitor) and when only one teacher was in the room, we coded whether the CAT or SET was leading the instruction.

Text type. At the end of the observation, observers recorded the types of text used throughout the observation (i.e., textbook, supplemental text, worksheet, projected text, text on a computer, connected text) to document what types of text, if any, were being used as a vehicle for learning. For the purposes of this study, we defined textbooks as a book designed

to accompany the content being taught, usually published by a large publishing company and hardbound. This included novels, particularly because they often take the place of textbooks in ELA classes. We defined supplemental text as a text that is neither a textbook nor designed to write responses in like a worksheet. Then, we defined worksheets as text including short sentences or paragraphs designed for students to complete specific tasks, generally shorter than supplemental texts. Projected text included text on a SmartBoard or PowerPoint slide. Text on the computer included text on a computer, laptop, or tablet. Finally, we also coded whether teachers were using connected text (i.e., text that included three or more sentences with punctuation and written in a paragraph format).

Observer training. Six graduate-level research assistants (RAs; five doctoral level and one master's student), one full-time research staff member, one part-time research staff member, and two of the principal investigators served as data collectors. For 4 weeks, the research team developed coding procedures and a codebook with operational definitions of target practices. To refine the operational definitions and coding procedures, we practiced watching 10- to 20-minute segments of co-teaching videos collected from various sources (e.g., a state education agency). After over 50 hours of work, we reached consensus and finalized the codebook. Using previously unseen video segments, we subsequently piloted the entire observation system on three video segments to practice coding with reliability.

Interobserver agreement. After the observer training was completed, we established IOA. Prior to conducting observations in the field, data collectors watched and coded two previously unviewed 10-minute video segments of co-teaching instruction. The principal investigator and project coordinator established two master code sheets to serve as the gold standard against which the other observers' codes were compared (Gwet, 2001; Swanson et al., 2015). The remaining observers subsequently independently coded Videos 1 and 2.

All-cell IOA was calculated by dividing the number of matches by the total number of possible cells. The observers achieved at least 90% agreement on each master video code sheet before coding in the field. We also required each observer to achieve at least 90% IOA on two consecutive live observations with their co-observer before we included the data from their observations. All pairs met this criterion. Across all live observations, observers obtained an average of 97% IOA with a range of 87% to 100%. To prevent observer drift, the research team met weekly to discuss and provide clarification when questions arose.

Data Analysis

After we completed all classroom observations, we determined the frequency of 20-second intervals in which each practice was observed for codes in each domain. Because we only recorded each 20-second interval once per minute, we describe these intervals as *minutes*. Frequency was summed across the 48 observations. Next, we divided the number of minutes in which each code was observed by the total minutes observed in that domain to create a percentage of minutes in which each practice was observed. We report the percentage of minutes that the practices occurred. Thus, the final results of practices in each domain can be interpreted as the frequency with which we observed each practice across all minutes observed. We recorded the text types at the observation level. We then calculated the total frequency of each type of text used across all 48 observations and divided this number by 48. This yielded an average percent of observations that used each text type.

Results

We observed in over 2,000 minutes of instruction provided by 16 co-teaching pairs, and we coded data for academic, student, and teacher domains within each minute. In a few instances, observers did not report codes within an interval. Occasionally, this was due
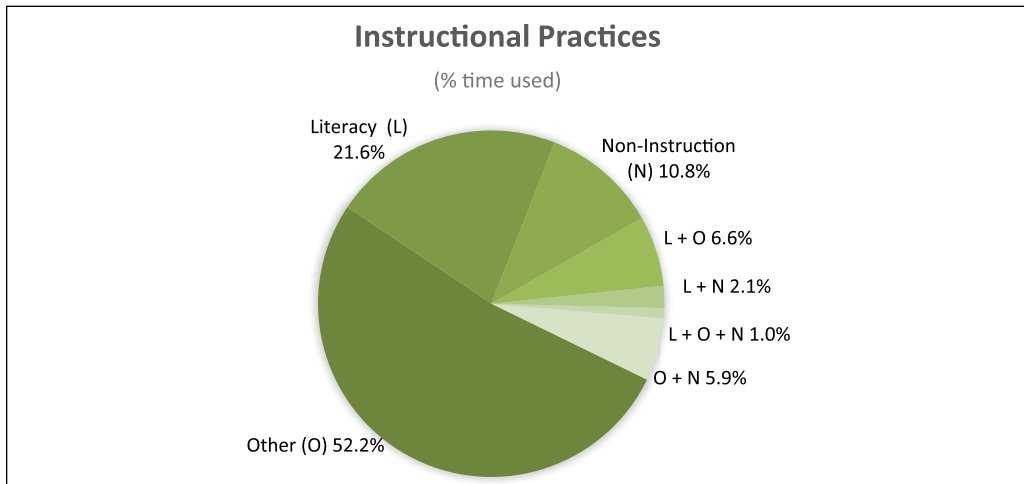
Figure 1. Overall instructional practices.
Note. Literacy (L) refers to literacy activities including both literacy instruction and text reading.

to a coding error. However, in most cases, it was because some circumstance in the classroom prevented it (e.g., student was not visible to the observer). We were able to generate codes for 2,185 minutes for the academic domain, 2,148 minutes for the student domain, and 2,168 minutes for the teacher domain.

Research Question 1: Literacy Activities

This question concerned the extent to which teachers conducted literacy activities, the specific activities teachers and students did, and the role each teacher played during implementation of the activities. In terms of the extent to which teachers addressed literacy in the classroom, teachers did literacy activities alone—that is, without other instruction (i.e., content-area instruction) or noninstructional events (i.e., providing no instruction or managing behavior)—for 471 of the 2,185 minutes (see Figure 1). This represented 21.6% of all minutes observed. Teachers provided other instruction for 1,140 minutes, or 52.2% of all minutes observed. Noninstructional events were observed for 236 minutes, or 10.8% of all minutes observed. For the remaining 338 minutes, coding of instruction spanned mul-

tiple categories. Teachers conducted literacy activities along with other instruction for 144 minutes (6.6%). Teachers directed students in literacy activities while also engaging students in noninstructional events for 45 minutes (2.1%). We observed co-occurring literacy activities, other instruction, and noninstructional events for 21 minutes (1.0%). Finally, for 128 minutes (5.9%), teachers provided other instruction along with noninstructional events. For example, they might have managed student behavior within an interval that also included content-area instruction.

In the academic domain of literacy activities, we coded both literacy instruction (i.e., instances where the activities fit one of our specific literacy instruction types) and text reading (i.e., periods where the teachers read aloud or the students read aloud or silently). Overall, we observed literacy activities (alone or combined with another code) for 681 minutes (31.2% of observed time). Of the 681 minutes any literacy activities were observed, 370 minutes included text reading with no co-occurring literacy instruction. This represented 16.9% of all minutes observed and 54.3% of minutes within the time spent on literacy activities. For 262 minutes (12.0% of observed time, 38.5% of time spent on literacy

Table 3. Amount and Types of Literacy Instruction.

Type	Minutes
Background knowledge	
Showing a picture or object	0
Showing a video or playing an audio recording	0
Other	13
Vocabulary	
Providing a definition or example	14
Teaching use of context clues	0
Teaching morphological awareness	1
Providing a visual or physical example	0
Preparation for reading	
Setting a purpose	23
Previewing text	19
Reading comprehension strategy	
Main idea and summarization	17
Questioning	217
Multiple evidence-based practices	7
Total	311

activities), teachers delivered literacy instruction without any text reading. For the remaining 49 minutes (2.2% of observed time, 7.2% of time spent on literacy activities), literacy instruction and text reading co-occurred. Overall, teachers spent 311 minutes delivering literacy instruction (14.2% of all minutes, 45.7% of time spent on literacy activities) either with or without reading. (See Table 3 for the amount and types of literacy instruction that occurred.)

In determining which teacher was leading the lesson, we examined time teachers spent leading literacy instruction and other instruction. We coded this only if instruction was occurring regardless of whether text reading was occurring. In the 311 minutes of literacy instruction we observed, the SET led instruction for 42 minutes (2.0% of all observed minutes, 13.5% of literacy instruction time), the CAT for 134 minutes (6.5% of all observed minutes, 43.1% of literacy instruction time), both teachers for 107 minutes (4.9% of all observed minutes, 34.4% of literacy instruction time), and no one for 21 minutes (1.0% of all observed minutes, 6.8% of literacy instruction time). The instructional leader code was missing for 7 of the 311 minutes. In terms of the teacher who led other instruction, we observed 183 minutes of other

instruction led by the SET (8.4% of all minutes observed, 12.8% of minutes spent on other instruction), 529 minutes by the CAT (24.2% of all minutes observed, 36.9% of other instruction), 399 minutes by both teachers (18.3% of all minutes observed, 27.8% of other instruction), 7 minutes by another person (0.3% of all minutes observed, 0.5% of other instruction), and 150 minutes by no one (6.9% of all minutes observed, 10.5% of other instruction).

Research Question 2: Grouping Students

Our second question focused on grouping arrangements teachers used during instruction. Of the 2,148 minutes of instruction, teachers had students work independently for 595 minutes (27.7% of all minutes observed), in a pair for 98 minutes (4.5% of all minutes observed), in a small group for 159 minutes (7.3% of all minutes observed), and as a whole class for 1,296 minutes (59.3% of all minutes observed). Combining time spent working independently and time in the whole class—that is, time typically without or a minimal amount of time dedicated to individualized support for the target SWD—we found that
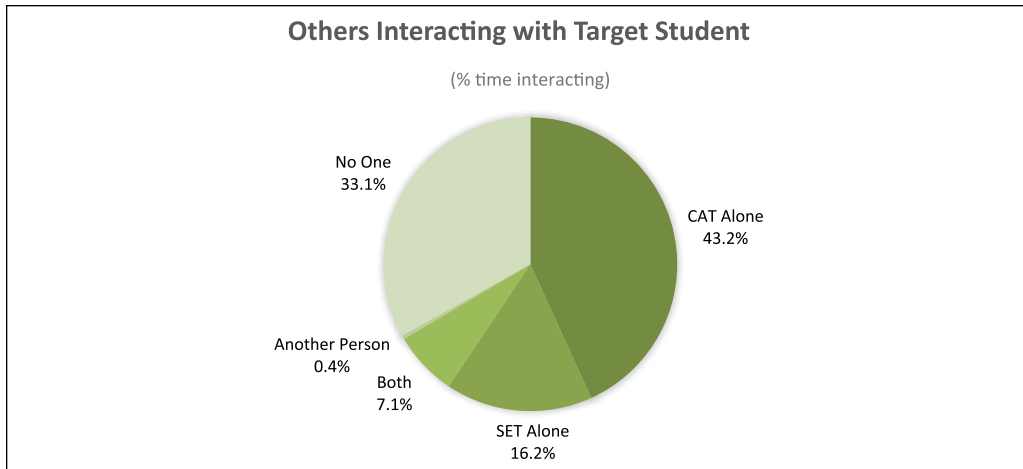
Figure 2. Target student interaction.

the whole-class and independent minutes totaled 1,891 minutes, 86.5% of the time we observed.

Research Question 3: Teacher Interaction With SWDs

Of the 2,148 minutes we observed teacher interaction with SWDs, SWDs interacted with the CAT for 928 minutes (43.2% of all time observed), the SET for 349 minutes (16.2% of time observed), both teachers for 152 minutes (7.1% of time observed), another teacher for 9 minutes (0.4% of time observed), and no teacher for 710 minutes (33.1% of time observed; see Figure 2).

Research Question 4: Co-Teaching Models

Observers were in classrooms for 186 minutes where no teacher was providing instruction (e.g., when working at their desk). For the 2,168 minutes we generated codes about co-teaching models, we coded whether the CAT was leading instruction, the SET, or both teachers. Table 4 shows this. Overall, SETs led instruction independently 14.1% of the time, and CATs led 42.2% of the time coded. The teachers led instruction together 35.3% of the time. When we compare just the time the teachers led instruction independently, CATs

led instruction four times more often than SETs (74.9% vs. 25.1%).

Research Question 5: Texts Used

Based on our operational definitions of texts, we examined whether and which texts were used in the 48 observations. In 45 observations (95.7%), teachers used a text as defined in the method section. In terms of the specific texts used, worksheets were used in 55.3% of observations, followed by textbooks or novels (38.3%) and supplemental text (34.0%). Teachers projected text on a Smartboard or in PowerPoint slides in 68.1% of observations, and they had activities where students read text on the computer in 21.3% of observations. In 33 observations (70.2%), teachers used texts that accorded with our operational definition of connected text.

Discussion

In this study, we observed 16 pairs of teachers deliver in over 2,000 minutes of co-taught instruction to middle school students in ELA classes. We observed co-teaching pairs three times each using a partial interval time sampling procedure to capture features of instruction across academic, student, and teacher domains. The primary purpose of the current paper was to document co-teachers' typical

Table 4. Minutes in Which Co-Teaching Model Was Observed.

Type	Lead Teacher			All	%
	SET	CAT	Both		
One teach–one observe	10	13	0	23	1.2
One teach–one assist	49	354	0	403	20.2
One teach–one monitor	101	305	0	406	20.4
Only one teacher	146	243	0	389	19.6
Station teaching	0	0	35	35	1.8
Parallel teaching	0	0	26	26	1.3
Alternative teaching	0	0	8	8	0.4
Team teaching	0	0	696	696	35.0
All types	306	915	765	1,986	100.0

Note. In 186 minutes of the observations, neither teacher was conducting instruction, so we could not code a co-teaching practice. For 13 minutes, nothing was coded. SET = special education teacher; CAT = content-area teacher.

evidence-based content-area literacy instruction to support the reading comprehension of SWDs in co-taught ELA classes. We also documented the use of overall practices designed to support SWDs (e.g., differentiated instruction through the use of various co-teaching models). Specifically, we coded the focus of instruction, roles teachers played during instruction, grouping structures, teacher interactions with SWDs, and types of texts used.

Literacy Instruction in Co-Taught ELA Classrooms

Teachers face difficult demands to cover a vast amount of content in a relatively short amount of time in the content-area setting (Lee & Spratley, 2010). Considering these demands as well as the fact that content-area classes (e.g., ELA) contain many SWDs who struggle with reading and comprehending text, it may be tempting for some teachers to avoid instruction that requires text reading in the hopes that they can cover content and reading demands more quickly in other ways (e.g., hands-on activities; Heller & Greenleaf, 2007). However, without regular opportunities to practice reading text and applying literacy strategies, students may suffer from a lack of exposure to critical content and vocabulary and incidentally learned background knowledge and an inability to apply literacy strategies when their comprehension breaks down while reading

independently (Gersten, Baker, Smith-Johnson, Dimino, & Peterson, 2006; Hairrell, Rupley, & Simmons, 2011).

Many school districts have adopted co-teaching in ELA classes in the hope that this service delivery model will meet the needs of all students, including secondary SWDs who often struggle with meeting the literacy expectations inherent in ELA. Proponents of co-teaching intend for the SET to take on a clear role in the classroom, helping to support SWDs by integrating text reading opportunities with concurrent evidence-based content-area literacy instruction as well as other forms of support (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003; Sileo, 2011).

Considering the close link with literacy in ELA (Lee & Spratley, 2010), we were not surprised that the ELA co-teachers spent about 30% of the time we observed integrating literacy activities into their ELA instruction. However, although ELA co-teachers spent a considerable amount of time on literacy activities, a closer examination revealed that over half of that time (54.3% of time spent on literacy activities, 16.9% of all time observed) was spent with teachers or students reading aloud or silently with no co-occurring literacy instruction. In other words, reading was occurring, but teachers were not explicitly pre-teaching essential background knowledge or vocabulary words necessary to understand the text or providing simultaneous instruction in strategies

students could use to enhance their own comprehension of text (e.g., main idea instruction). In fact, teachers rarely combined text reading and literacy instruction (7.2% of time spent on literacy activities, 2.2% of all time observed). The complex vocabulary, text structure, and concepts characteristic of secondary-level texts demand more support (Lee & Spratley, 2010; Swanson et al., 2015). This study adds to others showing that instruction is rarely dedicated to building independent evidence-based content-area literacy skills (see Ness, 2009; Swanson et al., 2015; Wexler et al., 2016).

Considering the amount of time teachers or students spent reading aloud or silently also begs the question: What types of text did students read? To increase reading stamina and provide practice reading text most commonly used at the secondary level and in state tests, students need opportunities to read and access content through connected text (Kaldenberg, Watt, & Therrien, 2015). We found that teachers used connected text in more than two-thirds of the observations, a finding that aligns with Swanson et al. (2015) in their observation of solo-taught secondary ELA classes. Although it is positive that co-teachers utilized a fair amount of connected text in their typical instruction in the ELA classes we observed, without more time dedicated to co-occurring literacy instruction, it is unlikely that students will accelerate their progress, generalize skills to enhance independent comprehension of upper level text, and ultimately access the content we expect them to learn (Vaughn, Wexler, et al., 2012).

Instructional Delivery Practices in Co-Taught ELA Classrooms

The fact that CATs must attend to a wide range of abilities in inclusive classrooms means that SETs can play an essential role in facilitating the learning of SWDs (Snell & Janney, 2000) and should play an equal role in instruction (Dieker & Murawski, 2003). On the positive side, the teachers led instruction together about a third of the time during literacy and non-literacy instructional time. However, most of remaining time involved the CAT leading instruction far more often than the SET. In

short, we observed what earlier studies (e.g., Rice & Zigmond, 2000) have shown—namely, SETs take on subordinate roles (e.g., taking attendance).

> *Teachers spent a majority of time using a co-teaching model characterized by one teacher, primarily the CAT, leading instruction.*

This is evident in our results regarding the types of co-teaching models teachers used. Despite such emphasis, teachers are still not using varied models. In terms of specific co-teaching models, teachers can consider their instructional goals when selecting when and how much of a co-teaching model is appropriate to utilize and which teacher would be most appropriate to lead instruction. The overall goal is that students benefit from the expertise of both teachers (Scruggs et al., 2007), but that is not what we observed. Teachers spent a majority of time using a co-teaching model characterized by one teacher, primarily the CAT, leading instruction (e.g., one teach–one assist). This trend has not changed in almost 20 years as several other researchers (e.g., Rice & Zigmond, 2000) also primarily observed co-teachers using co-teaching models in which the CAT alone led instruction while the SET took on a subordinate role. As long as schools continue to use co-teaching in inclusive settings, it may be helpful for researchers to explore reasons why teachers are not using more varied co-teaching models and design PD to teach teachers how to use co-teaching models that target students' needs through more varied models.

We also coded time SWDs interacted with instructors, including whole-class instruction. We decided to include whole-class instruction to document all interactions with adults. Our estimate of time spent interacting with adults would have been lower had we limited interactions to small group or one-on-one situations. Considering that the majority of classroom instruction was led by the CAT or the CAT and

SET together, it is not surprising that a majority of the SWD-teacher interaction was indeed with the CAT alone (43.2% of all time observed) and that the SET interacted with the target student for a smaller portion of the time we observed (16.2%). Perhaps more alarming, however, is that for an almost equal amount of time that the CAT alone interacted with the SWD, the SWD interacted with no other adult (33.1% of all time observed).

An often highlighted benefit of co-teaching is that the SET can provide targeted instruction, perhaps in a small group as mentioned previously, so the lack of interaction is problematic and suggests teachers have not been able to take advantage of the benefits of co-teaching. It is unlikely to expect that SWDs will make gains in the general education setting without specialized support from their teachers, including both the CAT and the SET, and it is even less possible when *no* teacher interacts with these students for a considerable amount of the total instructional time.

CATs and SETs can also vary grouping structures (i.e., independent, pairs, small group, whole class) to support SWDs in inclusive classrooms regardless of the co-teaching model they might be using. For example, a variety of co-teaching models are conducive to implementing small-group work (e.g., parallel teaching or station teaching). Although learning to work independently is part of instruction for all students and there is no specific guidance on the optimal amount of time for the use of any grouping structure, it is essential that co-teachers use a considerable amount of small-group and peer-mediated instruction to provide specialized instruction that targets the needs of SWDs (Conroy, Sutherland, Snyder, & Marsh, 2008; Dieker, 2001). Aligned with findings from Magiera and Zigmond's (2005) observation study of co-taught classrooms over a decade ago, our findings reveal that for most of the time (86.5%), students were engaged in whole-class or independent work, where opportunities to respond and receive feedback are typically less than when students are participating in small-group or peer-mediated instruction (Wexler et al., 2015). In the-

ory, having more than one specially trained teacher in the classroom should afford students this opportunity. Thus, regardless of the co-teaching model they were using, it was concerning that teachers primarily used whole-class instruction and independent work.

Limitations

A number of important limitations are noted. First, the participants represented a convenience sample. This could influence generalizability of the findings. Had we selected co-teaching pairs in a more purposeful manner (e.g., those with more than one year of previous co-teaching experience), the findings might have been different. Additionally, although we observed a sizeable sample of ELA co-taught classrooms, we did not have sufficient power to conduct further analyses to determine whether other variables (e.g., student-teacher ratio) were associated with the practices we observed. Second, we only coded one SWD in each observation as a representative sample of all SWDs. This might have underestimated the interaction of the SET with SWDs if the SET was assisting another student at the time we coded information about the target student. Also, we did not collect demographic information or achievement data on SWDs' current literacy performance. Third, the practices we chose to include on the observation tool (i.e., COT) were those types of literacy instructional practices—reflected in the IES Adolescent Literacy Practice Guide (Kamil et al., 2008) and several seminal adolescent literacy syntheses and meta-analyses—one would expect to see integrated into ELA classroom instruction that supports reading comprehension, but it is not exhaustive. For example, discipline-specific instruction (e.g., on specialized vocabulary not linked to text; Lee & Spratley, 2010) and writing instruction beyond main idea and summarization are not included. Fourth, although we attempted to code the genre (i.e., expository or narrative) of the text we observed students using, we did not report this information because we were not always able

to reliably decipher the genre of the text students were using during our observation time and did not collect any text for future analysis.

Recommendations for Practice

The descriptive and exploratory nature of this study precludes any strong recommendations. However, one practice has evident effectiveness, conducting content-area literacy activities that support reading comprehension, and these data indicate that CATs find it difficult to fit literacy activities into their daily instruction. Researchers have strongly advocated for the importance of integrating literacy activities that support reading comprehension into content-area instruction for over a decade now (Biancarosa & Snow, 2006), but it appears that other concerns are more salient for teachers. In a recent observation study, secondary science teachers explained their lack of literacy-related instruction by citing many barriers to integrating this specialized support for students (e.g., lack of time; Wexler et al., 2016). Adolescent literacy instruction like that captured by our observation instrument has a positive effect on student achievement, so we suggest a continued press to increase the use of these types of instruction.

There are many hypothesized virtues of co-teaching. Although there are not extant data on whether any particular practice is effective, one obvious—and frequently touted—advantage of co-teaching is that having two teachers allows for more targeted and meaningful support for SWDs around grade-level content standards. However, we observed that teachers rarely separated the class into smaller groups to provide more specialized instruction. SETs participate in co-teaching because they may be able to provide better support within the general education setting, but having them only co-teaching or assisting does not necessarily result in better support. Moreover, the SETs could help CATs meet their content objectives while increasing the quantity of content-area literacy instruction provided to the SWDs who need it most. CATs could continue with core content instruction

while SETs could provide related but foundational instruction (e.g., using station teaching; Davis, Dieker, Pearl, & Kirkpatrick, 2012). For example, when introducing text that students will read, the CAT might provide specific background and vocabulary knowledge related to that text while a SET can lead explicit strategy instruction (e.g., main idea instruction) to enhance students' comprehension. The teachers can also use data to determine students' needs and address them through targeted instruction with homogeneous, small groups that rotate through stations.

Recommendations for Future Research

There are at least four areas in which additional research is needed to better inform practice. First, our sample included only ELA co-taught classrooms. More research documenting the prevalence of and types of evidence-based practices occurring in other co-taught content-area classrooms (e.g., science) is warranted. Second, we were primarily interested in documenting literacy activities—including instruction and text reading—that support students' ability to comprehend text. However, more research documenting other types of literacy activities (e.g., writing) could help us understand the full extent to which CATs and SETs integrate literacy in co-taught classrooms. Third, our findings demonstrate that even though co-teaching in ELA classrooms is a prevalent practice intended to enhance instruction for all students, CATs and SETs are rarely implementing evidence-based content-area literacy instruction or differentiation of instruction. This is concerning in that the primary aim of co-teaching is to allow instructors to meet the needs of a more diverse group of learners. Additional experimental studies are needed to evaluate the efficacy of various models of co-teaching and understand the most efficient methods to infuse literacy instruction and differentiation of instruction through various

grouping structures and co-teaching models into co-taught content-area classrooms. Fourth, PD related to effective co-teaching models must be developed and further studied. A recent review provided sobering evidence that PD can improve the knowledge and skill of instructional staff, but it appears to have no impact on student outcomes (National Center for Education Evaluation and Regional Assistance, 2016). Given the increasing prevalence of co-teaching and need for improving practices that CATs and SETs deliver in co-taught ELA classrooms based on the current study, a better understanding of how co-teaching PD can result in teacher and student achievement improvements is critical.

Conclusion

The idea of having a CAT and SET co-teach instruction to better address the needs of a diverse set of learners holds promise for enabling many SWDs to access general education content. However, findings from this study indicate that co-teaching as implemented in middle school classrooms frequently falls short of the ideal. Although we observed a great deal of instruction that was led by both teachers in the room, it was rare that the additional teacher was used to differentiate or individualize instruction for SWDs. Teachers clearly need additional explicit guidance on how to share teaching responsibilities to ensure that the needs of SWDs are met. More specifically, teachers need direction on the types of literacy activities they should be implementing, the specific role that each teacher should play in instruction, and ways to more efficiently support learners who have reading difficulties. The findings from this study highlighted the need to develop PD that incorporates explicit guidance for co-teachers in how to increase instances of text reading opportunities with co-occurring literacy instruction, provide specialized roles for both teachers, increase the amount of small-group and peer-mediated instruction, and use co-teaching models that allow students to benefit from specialized support from each teacher.

References

Arguelles, M. E., Hughes, M. T., & Schumm, J. S. (2000). Co-teaching: A different approach to inclusion. *Principal*, *79*(4), 48, 50–51.

Artiles, A. J., Harris-Murri, N., & Rostenberg, D. (2006). Inclusion as social justice: Critical notes on discourses, assumptions, and the road ahead. *Theory Into Practice*, *45*(3), 260–268. doi:10.1207/s15430421tip4503_8

Baumann, J. F., Edwards, E. C., Boland, E. M., Olejnik, S., & Kame'enui, E. J. (2003). Vocabulary tricks: Effects of instruction in morphology and context on fifth-grade students' ability to derive and infer word meanings. *American Educational Research Journal*, *40*(2), 447–494. doi:10.3102/0002812040002447

Biancarosa, G., & Snow, C. (2006). *Reading next: A vision for action and research in middle and high school literacy: A report to the Carnegie Corporation of New York* (2nd ed.). Washington, DC: Alliance for Excellent Education.

Boardman, A. G., Klingner, J. K., Buckley, P., Annamma, S., & Lasser, C. J. (2015). The efficacy of Collaborative Strategic Reading in middle school science and social studies classes. *Reading & Writing*, *28*, 1257–1283.

Bottge, B. A., Cohen, A. S., & Choi, H.-J. (2017). Comparisons of mathematics intervention effects in resource and inclusive classrooms. *Exceptional Children*, *84*(2), 197–212. doi:10.1177/0014402917736854

Bryant, D. P., Bryant, B. R., Flower, A., McKenna, J., Muething, C., Shin, M., & Kim, M. (2013). *Secondary special education observation and intervention study: Technical report*. Austin, TX: Meadows Center for Preventing Educational Risk, University of Texas at Austin, and Texas Education Agency.

Bulgren, J. A., Graner, P. S., & Deshler, D. D. (2013). Literacy challenges and opportunities for students with learning disabilities in social studies and history. *Learning Disabilities Research & Practice*, *28*(1), 17–27. doi:10.1111/ldrp.12003

Carnegie Council on Advancing Adolescent Literacy. (2010). *Time to act: An agenda for advancing adolescent literacy for college and career success*. New York: Carnegie Corporation of New York.

Conroy, M. A., Sutherland, K. S., Snyder, A. L., & Marsh, S. (2008). Classwide interventions: Effective instruction makes a difference.

Teaching Exceptional Children, *40*(6), 24–30. doi:10.1177/004005990804000603

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

Davis, K. E. B., Dieker, L., Pearl, C., & Kirkpatrick, R. M. (2012). Planning in the middle: Co-planning between general and special education. *Journal of Educational and Psychological Consultation*, *22*, 208–226. doi:10.1080/10474412.2012.706561

Deshler, D. D. (2005). Adolescents with learning disabilities: Unique challenges and reasons for hope. *Learning Disability Quarterly*, *28*(2), 122–124. doi:10.2307/1593609

Dieker, L. A. (2001). What are the characteristics of "effective" middle and high school co-taught teams for students with disabilities? *Preventing School Failure: Alternative Education for Children and Youth*, *46*(1), 14–23. doi:10.1080/10459880109603339

Dieker, L. A., & Murawski, W. W. (2003). Co-teaching at the secondary level: Unique issues, current trends, and suggestions for success. *High School Journal*, *86*(4), 1–13. doi:10.1353/hsj.2003.0007

Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., & Schnakenberg, J. W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research*, *79*, 262–300. doi:10.3102/0034654308325998

Every Student Succeeds Act, 20 U.S.C. § 6301 (2015).

Friend, M. (2000). Myths and misunderstandings about professional collaboration. *Remedial and Special Education*, *21*(3), 130–160. doi:10.1177/074193250002100301

Gersten, R., Baker, S. K., Smith-Johnson, J., Dimino, J., & Peterson, A. (2006). Eyes on the prize: Teaching complex historical content to middle school students with learning disabilities. *Exceptional Children*, *72*(3), 264–280. doi:10.1177/001440290607200301

Goldman, S. R., & Snow, C. E. (2015). Adolescent literacy: Development and instruction. In A. Pollatsek & R. Treiman (Eds.), *The Oxford handbook of reading* (pp. 463–478). Oxford, UK: Oxford University Press.

Greenleaf, C., Schoenbach, R., Cziko, C., & Mueller, F. (2001). Apprenticing adolescent readers to academic literacy. *Harvard Educational Review*, *71*(1), 79–130. doi:10.17763/haer.71.1.q811712577334038

Gwet, K. (2001). *Handbook of inter-rater reliability: How to estimate the level of agreement between two or multiple raters*. Gaithersburg, MD: STATAXIS.

Haager, D., & Vaughn, S. (2013). The Common Core State Standards and reading: Interpretations and implications for elementary students with learning disabilities. *Learning Disabilities Research & Practice*, *28*(1), 5–16. doi:10.1111/ldrp.12000

Hairrell, A., Rupley, W., & Simmons, D. (2011). The state of vocabulary research. *Literacy Research and Instruction*, *50*(4), 253–271. doi:10.1080/19388071.2010.514036

Haydon, T., Mancil, G. R., & Van Loan, C. (2009). Using opportunities to respond in a general education classroom: A case study. *Education and Treatment of Children*, *32*(2), 267–278. doi:10.1353/etc.0.0052

Heller, R., & Greenleaf, C. (2007). *Literacy instruction in the content areas: Getting to the core of middle and high school improvement*. Washington, DC: Alliance for Excellent Education.

Individuals with Disabilities Education Improvement Act, 20 U.S.C. 1400 et seq. (2004).

Kaldenberg, E. R., Watt, S. J., & Therrien, W. J. (2015). Reading instruction in science for students with learning disabilities: A meta-analysis. *Learning Disability Quarterly*, *38*(3), 160–173. doi:10.1177/0731948714550204

Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., & Torgesen, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices. A practice guide* (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Kennedy, M. J., & Ihle, F. M. (2012). The old man and the sea: Navigating the gulf between special educators and the content area classroom. *Learning Disabilities Research & Practice*, *27*(1), 44–54. doi:10.1111/j.1540-5826.2011.00349.x

Lee, C. D., & Spratley, A. (2010). *Reading in the discipline: The challenges of adolescent Corwin literacy*. New York: Carnegie Corporation of New York.

Magiera, K., & Zigmond, N. (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

Manset, G., & Semmel, M. I. (1997). Are inclusive programs for students with mild disabilities effective? A comparative review of model programs. *Journal of Special Education*, *31*(2), 155–180. doi:10.1177/002246699703100201

McKenna, J. W., Muething, C., Flower, A., Bryant, D. P., & Bryant, B. (2015). Use and relationships among effective practices in co-taught inclusive high school classrooms. *International Journal of Inclusive Education*, *19*(1), 53–70. doi:10.1080/13603116.2014.906665

McLeskey, J., & Waldron, N. L. (2011). Educational programs for elementary students with learning disabilities: Can they be both effective and inclusive? *Learning Disabilities Research & Practice*, *26*(1), 48–57. doi:10.1111/j.1540-5826.2010.00324.x

Murawski, W. W., & Dieker, L. A. (2004). Tips and strategies for co-teaching at the secondary level. *Teaching Exceptional Children*, *36*(5), 52–58. doi:10.1037/e574172010-006

Murawski, W. W., & Lochner, W. W. (2011). Observing co-teaching: What to ask for, look for, and listen for. *Intervention in School and Clinic*, *46*(3), 174–183. doi:10.1177/1053451210378165

Murawski, W. W., & Swanson, H. L. (2001). Meta-analysis of co-teaching research: Where are the data? *Remedial and Special Education*, *22*(5), 258–267. doi:10.1177/074193250102200501

National Center for Education Evaluation and Regional Assistance. (2016). *Does content-focused teacher professional development work? Findings from three Institute of Education Sciences studies*. Washington, DC: Institute of Education Sciences. Retrieved from https://ies.ed.gov/ncee/pubs/20174010/

National Center for Education Statistics. (2015). *The nation's report card: Reading 2015*. Washington, DC: U.S. Department of Education, Institute of Education Sciences.

Ness, M. K. (2009). Reading comprehension strategies in secondary content area classrooms: Teacher use of and attitudes towards reading comprehension instruction. *Reading Horizons*, *49*(2), 143–166. doi:10.1080/02568543.2010.531076

Newman, L. (2006). *Facts from NLTS2: General education participation and academic performance of students with learning disabilities*. Menlo Park, CA: SRI International. Retrieved from www.nlts2.org/fact_sheets/nlts2_fact_sheet_2006_07.pdf

Partin, T. C., Robertson, R. E., Maggin, D. M., Oliver, R. M., & Wehby, J. (2010). Using teacher praise and opportunities to respond to promote appropriate student behavior.

Preventing School Failure, *54*(3), 172–178. doi:10.1080/10459880903493179

Porter, A., McMaken, J., Hwang, J., & Yang, R. (2011). Common Core Standards: The new U.S. intended curriculum. *Educational Researcher*, *40*(3), 103–116. doi:10.3102/0013189x11405038

Rice, D., & Zigmond, N. (2000). Co-teaching in secondary schools: Teacher reports of developments in Australian and American classrooms. *Learning Disabilities Research & Practice*, *15*(4), 190–197. doi:10.1207/sldrp1504_3

Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., Reutebuch, C., & Torgesen, J. K. (2007). *Interventions for adolescent struggling readers: A meta-analysis with implications for practice*. Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Scruggs, T. E., Mastropieri, M. A., & McDuffie, K. A. (2007). Co-teaching in inclusive classrooms: A meta-synthesis of qualitative research. *Exceptional Children*, *73*, 392–416. doi:10.4135/9781483346243.n80

Sileo, J. M. (2011). Co-teaching: Getting to know your partner. *Teaching Exceptional Children*, *43*(5), 32–38. doi:10.1177/004005991104300503

Snell, M. E., & Janney, R. (2000). *Collaborative teaming: Teachers' guides to inclusive practices*. Baltimore, MD: Brookes.

Solis, M., Miciak, J., & Vaughn, S. (2014). Why intensive interventions matter: Longitudinal studies of adolescents with reading disabilities and poor reading comprehension. *Learning Disability Quarterly*, *37*(4), 218–229. doi:10.1177/0731948714528806

Solis, M., Vaughn, S., Swanson, E., & McCulley, L. (2012). Collaborative models of instruction: The empirical foundations of inclusion and co-teaching. *Psychology in the Schools*, *49*, 498–510. doi:10.1002/pits.21606

Stevens, E. A., Park, S., & Vaughn, S. (2018). A review of summarizing and main idea interventions for struggling readers in Grades 3 through 12: 1978–2016. *Remedial and Special Education*. Advance online publication. doi:0741932517749940

Swanson, E., Wanzek, J., McCulley, L., Stillman, S., Vaughn, S., Simmons, D., . . . Hairrell, A. (2015). Literacy and text reading in middle and high school social studies and English language arts classrooms. *Reading & Writing Quarterly*, *32*, 199–222. doi:10.1080/10573569.2014.910718

Swanson, E., Wanzek, J., Vaughn, S., Fall, A. M., Roberts, G., Hall, C., & Miller, V. L. (2017). Middle school reading comprehension and

content learning intervention for below-average readers. *Reading & Writing Quarterly*, *33*(1), 37–53. doi:10.1080/10573569.2015.1072068

Tobin, R. (2005). Co-teaching in language arts: Supporting students with learning disabilities. *Canadian Journal of Education*, *28*(4), 784–801. doi:10.2307/4126455

U.S. Department of Education. (2011). *National report on the condition of education*. Retrieved from http://nces.ed.gov/pubs2011/2011033.pdf

Vaughn, S., Wanzek, J., Murray, C. S., & Roberts, G. (2012). *Intensive interventions for students struggling in reading and mathematics. A practice guide*. Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Vaughn, S., Wexler, J., Leroux, A., Roberts, G., Denton, C., Barth, A., & Fletcher, J. (2012). Effects of intensive reading intervention for eighth-grade students with persistently inadequate response to intervention. *Journal of Learning Disabilities*, *45*(6), 515–525. doi:10.1177/00222191411402692

Villa, R. A., Thousand, J. S., & Nevin, A. (2005). Successful inclusive practices in middle and secondary schools. *American Secondary Education*, *33*(3), 33–50.

Wagner, M., Newman, L., D'Amico, R., Jay, E. D., Butler-Nalin, P., Marder, C., & Cox, R. (1991). *Youth with disabilities: How are they doing? The first comprehensive report from the national longitudinal transition study of special education students* (SRI International, Contract 300-87-0054). Washington, DC: U.S. Department of Education, Office of Special Education Programs.

Weiss, M. P., & Lloyd, J. W. (2002). Congruence between roles and actions of secondary special educators in co-taught and special education settings. *Journal of Special Education*, *36*(2), 58–68. doi:10.1177/00224669020360020101

Welch, M., Brownell, K., & Sheridan, S. M. (1999). What's the score and game plan on teaming in schools? A review of the literature on team teaching and school-based problem-solving teams. *Journal for Special Educators*, *20*(1), 36–49. doi:10.1177/074193259902000107

Wexler, J., Mitchell, M. A., Clancy, E. E., & Silverman, R. D. (2016). An investigation of literacy practices in high school science classrooms. *Reading & Writing Quarterly*, *33*, 258–277. doi:10.1080/10573569.2016.1193832

Wexler, J., Reed, D. K., Pyle, N., Mitchell, M., & Barton, E. E. (2015). A synthesis of peer-mediated academic interventions for secondary struggling learners. *Journal of Learning Disabilities*, *48*(5), 451–470. doi:10.1177/0022219413504997

Zigmond, N. (2006). Reading and writing in co-taught secondary school social studies classrooms: A reality check. *Reading and Writing Quarterly*, *22*(3), 249–268. doi:10.1080/10573560500455711

Authors' Note