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Co-teaching Strategies: Improving Student Engagement by Increasing Opportunities to Respond

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Co-teaching Strategies: Improving Student Engagement by Increasing Opportunities to Respond

Abstract

Research indicates that effective co-teaching using high leverage practices can maximize outcomes across content areas and positively affect student engagement. This paper discusses practical ways to increase student engagement by increasing opportunities to respond in a co-teaching setting. Specific examples are included for a secondary mathematics co-taught classroom, but the principles can be applied in any subject or setting. A proposed model of professional development and coaching to support effective questioning techniques and increase opportunities to respond is also discussed for the purposes of teacher training and professional development.

Keywords

Co-teaching, Engagement, OTR, HLP

Co-teaching Strategies: Improving Student Engagement by Increasing Opportunities to Respond

Research has indicated that student engagement is an essential component in students' academic success (Hattie, 2009; Klem & Connell, 2004). Students engaged in classroom instruction achieve at higher levels than their peers who do not (Brophy & Good, 1984; Finn & Zimmer, 2012). Students want to be engaged and crave hands-on activities with open access to discussion (Certo et al., 2008; Himmele & Himmele, 2017) and those participating in a classroom environment focused on active engagement demonstrate improved test scores of up to six percent, while their peers who remain passively engaged in lecture-style instruction are one and a half times more likely to fail (Freeman et al., 2014). Unfortunately, a compilation of Gallup polls taken over the last several years indicates that only 47% of students in grades 5-12 reported active engagement in school (Hodges, 2021). Students who are not actively engaged are less likely to persevere in academic tasks, develop negative feelings about school, or even exhibit inappropriate behaviors. Therefore, engagement during instruction is essential to maximize outcomes for all students, but the need to attend to and participate in instruction becomes even more critical for students with disabilities, English language learners, or those coming from lower socioeconomic backgrounds (Finn & Zimmer, 2012).

How To Increase Engagement in Co-Taught Classrooms

Struggling learners often learn in general education classrooms in a co-taught setting. This arrangement consists of two teachers, one certified in the content area and one in special education, delivering lessons to all students together (Cook & Friend, 1995). Placement in a co-taught class allows students with disabilities to receive the required individualized specially designed instruction (SDI) based on their unique needs while learning from a content expert alongside their peers. All students in the class reap the benefits of having two teachers. This paper reviews the role of high leverage practices in increasing engagement in co-taught mathematics classrooms along with examples and outlines a proposed study using a pre-training module and one-on-one coaching to support co-teachers in co-taught mathematics classrooms in implementing this strategy.

An effective co-teaching team of two certified teachers working together can improve the active participation of all students. Research indicates students in a co-teaching classroom experience more cognitive engagement and higher achievement than classrooms containing just one teacher (Lochner et al., 2019; Ronfeldt et al., 2019). Research also demonstrates that some of the most effective

strategies come from the use of high leverage practices: teacher collaboration (HLP-1) is at the heart of the co-taught classroom. Teachers are required to work together to provide differentiated instruction for all students. Co-planning is important for effectively delivery of instruction. Explicit instruction (HLP-16) is an evidence-based practice most effective for students with disabilities. It also increases the number of instructional opportunities that at-risk learners receive (Archer & Hughes, 2011; Doabler & Fien, 2013; Friend, 2019).

Opportunities to Respond

Student engagement (HLP-18). is a component of explicit instruction (Archer & Hughes, 2011) , and one type of engagement strategy is the high leverage practice of providing a high number of opportunities to respond (OTR). These are a teacher’s way of presenting learning trials and can occur based on whole group, individual, or peer-to-peer responses. Research indicates that OTR increase engagement and promote student behavior improvements and academic outcomes (McLeskey et al., 2017; Sutherland & Wehby, 2001). Accurate, high-frequency OTR allow students to show what they know and provide immediate feedback to the students, either by using behavior-specific praise or implementing feedback based on student responses (Archer & Hughes, 2011; Whitney et al., 2014). Data reflects a drastic gap in the rates in which OTR in high school mathematics classes across settings are occurring, with an average of one every 2.72 min, compared to the 4 to 8 per minute recommendation (Whitney et al., 2014; Sutherland & Wehby, 2001). Hirn & Scott (2014) corroborate that the rates of opportunities to respond are occurring below recommended levels for high school students. Research reflects that an increase in OTR from an average of 1 every 3.75 min to one every 0.73 min resulted in an increase of student engagement of 28.81% (Cooper et al., 2017).

An example of providing an opportunity to respond in a co-taught mathematics classroom is, Ms. N is co-teaching with Ms. T using station teaching. Ms. N wants every student to have multiple opportunities to respond so she utilizes choral responding. She writes an equation on the board $x + 3 = 13$ and delivers the prompt, “Group, let’s read this equation together”. Ms. N points to each term as the students respond in unison, “A number plus three equals 13”. “Exactly! Now, what does it mean to solve an equation?” The students respond in unison, “to isolate the variable”.

Eliciting Responses

Eliciting responses is another important component of engagement. It keeps the pace of instruction brisk and keeps students on task and focused on the key components of what they are learning. Struggling students often do not actively participate in the lesson. By creating various ways for them to respond,

they may find a comfortable jumping in point to the discussion. Students are often more receptive to learning from their peers than from their teachers. These responses can act as formative assessment to determine student misconceptions and help guide instruction.

There are three general types of responses: verbal, written, and active. Verbal responses include choral responding on a specified signal from the teacher, turn and talk with a partner, working in a team or small group to formulate an answer, whole-class discussion, and individual responding. Examples of written responses are entrance/exit slips, bell ringers/warm-ups, journal entries, response cards, whiteboards, and guided notes. Active responses rely on movement. Students can respond with a gesture such as a “thumbs up”, by movement like leaning to one side or standing up, using pre-determined hand signals to indicate agreement (or not), or by changing expressions based on the desired response.

Ms. N and Ms. T are co-teaching using a team teaching model before lunch and are working on solving the one-step equation $x + 3 = 13$. They want to use active responding because the students are getting restless. Ms. N delivers the prompt, “Class, let’s look at the equation. Ramon told us that we need to use the inverse operation and take a positive three from both sides of the equation. Stand up if you agree with Ramon and cross your hands over your chest if you disagree.” Ms. T watches the students to make sure everyone is responding. Ms. N continues, “Good! Everybody back in your seats. Mohammed, tell me why you agree”.

Effective Questioning

Providing these opportunities is tied directly to the delivery of effective questioning at varying levels of difficulty (Brophy & Good, 1984). One way to ensure effectiveness is to focus on formulating open-ended questions which require an explanatory response. Examples would be “why” questions, asking for comparisons, or creating a statement requiring students to agree or disagree and encourage an explanation of their rationale. It is important to allow 3-5 seconds of wait time before requiring a response. Doing so will encourage a higher level of participation and more detailed responses.

Jones & Texas (2017) suggest four opportunities within the lesson to ask questions. When the lesson is being introduced, it is important to provide multiple entry points to allow for all students to find a place to jump into the content. One of the most challenging questions are needed to move students forward in the lesson. During co-planning, it is important to understand common areas of the lesson where students struggle or have become stuck in the past, and pre-plan the questions to be asked which will move the student forward in the lesson. When a student has completed an assignment or problem, it is a good time to ask questions to encourage reflection on the process or alternate methods of reaching

the solution. Finally, an extension question can be used when we want to stretch the student to a higher depth of knowledge about their response.

Most importantly, know your audience. Get to know your students personally and strive to understand their backgrounds and what they like so that you can tie questions back to their frames of reference and interests.

Ms. N and Ms. T are team teaching in their classroom and are introducing key features of absolute value functions and want to make sure all their students have an entry point to the lesson. Ms. T she uses a side-view diagram of a scuba diver descending to a low point and returning to the surface with a dashed “V” outlining the dive. She asks the students, “Class, look at this diagram. What do you notice?” She utilizes a 3 sec wait time and student examples include: “She’s diving. She went down and up the same way. She made a “V” with her dive”. She acknowledges all responses. Ms. N now asks, “Class, what do we not know about this scenario?” Student responses include: “How deep the water is. How much air is in her tank? Is there a current?” No answer is incorrect, and each student find a place to enter the lesson.

Monitoring Responses

As students are provided with an increased number of OTR, it is important to monitor responses and provide immediate feedback. This is done by moving around the room and listening to all responses. Be sure to focus on the struggling students to ensure they are responding correctly. This close monitoring provides important feedback regarding student understanding and helps determine whether additional practice is needed or if it is appropriate to move forward in the lesson.

During a lesson on geometry translations, Ms. N and Ms. T are working through examples on a SmartBoard by writing the translation while students use dry erase boards to indicate the translation direction and units. Ms. T puts up $(x, y) \rightarrow (x + 13, y - 4)$ and prompts the students, “Class, look at this translation and write on your board how this is going to move. Hold your board up when you are done” Ms. N walks around the room, checking to make sure everyone is responding correctly by writing “right 13, down 4” and providing feedback. She is making sure to check in on students who have been struggling or those with low confidence. She gives Ms. T a “thumbs up” to indicate a move the next example.

Feedback

The important thing to remember about feedback is that it needs to be immediate. Plan beforehand how you will respond when students are correct. Often this will be a statement of affirmation or behavior-specific praise but can also be as simple as a head nod, a “thumbs up”, or “ok” sign. Corrective feedback should always be delivered using a positive tone and convey an attitude of encouragement. It may entail providing additional questions to determine where

the misconceptions took place and may require re-teaching or guided assistance to resolve. The student should always repeat back the correct response.

Ms. T uses the next example $(x, y) \rightarrow (x - 3, y + 7)$ and prompts the students, “Class, look at this translation and write on your board how this is going to move. Hold your board up when you are done” Ms. N walks around the room, checking to make sure everyone is responding correctly by writing “left three, up seven”. Ms. T checks the students she can see from the front of the room. As she moves about, she is acknowledging every student’s response as they hold up the white board. “Yes! Your math brain is wide awake today. That’s right! You’ve got it.” Ms. N notices Susan writes “down three, right seven” on her board. She prompts Susan, “Susan, look at the coordinate plane on the anchor chart. Tell me what you notice about the direction of the x axis”. Susan responds, “It goes left and right”. Ms. N affirms the answer, “Exactly! So, if the translation for the x axis is $x - 3$, will we go left, or right? How many units? Susan responds with “Left, three units”. Ms. N repeats the prompts with the y axis and Susan correctly responds with, “Up, seven units”. Ms. N, “When you put it all together you have left three, up seven units. How do you move?” Susan responds, “Left three, up seven units”. Ms. N affirms with a thumbs up.

Pace of Instruction

It is important to maintain an appropriate pace of instruction that allows students to effectively grasp the concepts without being overwhelmed but also brisk enough to maintain engagement. To ensure the right pace for your students, start by being prepared. This means, have the lesson planned out. Pre-program questions for entry and know the “sticking points” where additional questions will be necessary. Sketch out what those are based on previous learners or experience with the content. Likewise, have all materials ready and have a clear agenda visible for students to gauge progress. Establish classroom routines to optimize transition time. Understand the goal for providing OTR and self-monitor progress towards exceeding it or have a colleague observe to take data. Allow think time for students to respond, but not too long; this will help keep the pace brisk.

Partnership to Support Engagement in Math Co-taught Settings

One content area where co-teaching is commonly utilized is mathematics. Students receiving SDI in the mathematics classroom may have the diagnosis of a disability in basic math, math calculation, or mathematic reasoning. Others may have working memory issues that cause them to struggle with recalling material previously learned or persevering through more extended, challenging problems. The National Council of Teachers of Mathematics (NCTM) guiding principle for access and equity (2015) states, “An excellent mathematics program requires that

all students have access to a high-quality mathematics curriculum, effective teaching and learning, high expectations, and the support and resources needed to maximize their learning potential” (p. 5). To ensure this level of equity, having two qualified teachers in the classroom to support individualized needs, monitor progress, and provide feedback to achieve this level of learning has become a necessity. According to the National Mathematics Advisory Panel (2008), “Explicit systematic instruction was found to improve the performance of students with learning disabilities in computation, solving word problems, and solving problems that require the application of mathematics to novel situations.” (p. 48). It is therefore critical to provide a learning structure for teachers to implement OTR in mathematics classrooms better.

Professional Development

The effective use of high leverage practices has been demonstrated to increase engagement. It is critical that teachers receive the necessary training to effectively use these strategies to maximize learner outcomes. An examination of effective professional development suggests that it needs to be content-focused; ongoing, to offer opportunities for learning, application, and reflection; and collaborative in nature featuring coaching and direct feedback (Darling-Hammond, et al., 2017). The Standards for Professional Learning (Killion & Crow, 2011) help ensure that teachers are getting the most of their own development so that they can maximize the learning of their students. They address the importance of collaborative learning to support teachers in their practical implementation of professional development, reinforcing coaching and feedback as a critical element for success. Joyce and Showers (2002) agree that teachers struggle to implement newly learned strategies in the classroom without this kind of collaboration. It is a generally accepted notion that when teachers improve themselves, their abilities and efficacy will improve along with student success. Desimone & Pak (2016) concur that a valid method of helping teachers find their way through new instructional practices is to provide coaching and feedback along with professional development. A coach is not only beneficial in offering dialogue and feedback to guide teachers through implementing new habits of mind in their instruction but also to bring encouragement to the sometimes-challenging process (Wang, 2017).

Professional Development Pre-Training

Prior to beginning any journey, it is important to first know your starting point. Teachers must first acknowledge and understand how they are currently operating before embarking on their pathway to increasing engagement in the classroom (Whitney et al., 2014). In a proposed study, teachers will participate in an asynchronous, interactive PowerPoint pre-training module that models numerous opportunities to respond while guiding them through the importance of

student engagement. The module begins with a brief pre-survey regarding their present levels of engagement as evidenced by providing OTR and feedback to students (Figure 1) and walks through the high leverage practices in this paper. Teachers view a video exemplar and are prompted to note their observations and any adjustments they can make to their instruction based off those observations. This video modeling strategy is suggested to be more impactful than direct delivery of professional development curriculum (Downer et al., 2011).

Follow-Up Training and Coaching

Once teachers have received instruction in the basics of providing OTR via the asynchronous module, face-to-face training commences. This component is designed to be more interactive with a high number of OTR for the teachers in addition to facilitating planning time to begin strategizing how they will work in their teams to build these into their lesson plans. This is also time for coaches to be listening, supporting, and clearing up misconceptions with the teaching teams. These interactions will be the basis of building trusting relationships with the teams to foster a dialogical coaching platform of inquiry and empowering teachers to make decisions off research.

In the final and ongoing portion of training, coaches will partner with teachers for regular observations to monitor for number of OTR and active student engagement while teachers self-monitor for the same (Figure 2). Bi-weekly meetings lend themselves to opportunities for discussion and individualized coaching as needed. At the end of the study, teachers participate in a post-study survey identical to the pre-survey and engagement data is compiled and analyzed.

Limitations of this study include present attitudes of both teachers and students given teaching and learning experiences during the current pandemic environment. Discovery regarding current attitudes and dispositions may be helpful in assuring the implementation of supports is viewed as supportive rather than punitive.

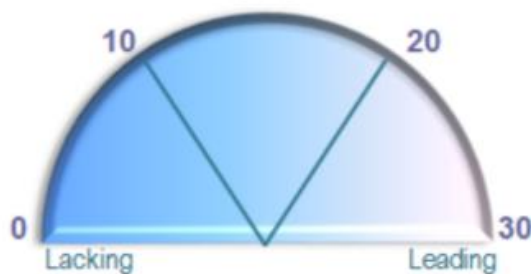
Implications for Practice

Remaining engaged in the classroom is a key component of academic success. This study is currently in planning to support general education teachers and exceptional child educators in co-taught mathematics classrooms in a low-performing high school. The goal of the school is to create co-taught classrooms to evolve into a model for their district. By pre-exposing teachers to the content via a pre-training module before implementing traditional professional development and one-on-one coaching on these practices, this study seeks to answer the questions 1) Will a combined approach of traditional professional development and individualized coaching effectively increase the number of opportunities to respond in an urban secondary co-teaching mathematics

classroom?, 2) Does an increase in the number of opportunities for students to respond result in an increase in student engagement?, and 3) How does increasing the number of opportunities to respond affect learner content mastery? This could be important in any classroom but is imperative for those with diverse learning needs. Learning how to engage in content areas opens the possibility for enhanced academic outcomes which could lead to greater confidence in approaching the general curriculum and improvement in general attitudes toward school.

Figure 1
Pre/Post Survey

Co-teaching Engagement Pre-Survey
How will you move your gauge?



1. I can provide frequent opportunities for students to engage or respond during instruction.
 Strongly Disagree Disagree Neutral Agree Strongly Agree
2. I can present tasks which promote student engagement in multiple ways (making mathematical connections with multiple representations, strategies, or pathways).
 Strongly Disagree Disagree Neutral Agree Strongly Agree
3. I can question, provide encouragement and time for students to make multiple attempts at engaging in lessons.
 Strongly Disagree Disagree Neutral Agree Strongly Agree
4. I can provide appropriate time for students to reflect on reasoning and understanding and engage with others regarding their insights.
 Strongly Disagree Disagree Neutral Agree Strongly Agree
5. I can provide immediate corrective feedback to students based on responses.
 Strongly Disagree Disagree Neutral Agree Strongly Agree

Additional Comments:

Figure 2
Observation/Self-Monitoring Form

Coaching Observation Form*

Teacher _____ Date _____
 Time _____ Observer _____
 Class _____ Activity _____

Record tally marks for the following behaviors.

Benchmark	10 Minute Time Frame		Total
Opportunities to Respond	Whole Group	Verbal	
	Individual	Written	
	Peer	Action	
Disruptions			

Rate of OTR/MIN: TOTAL#/10= _____ GOAL: _____

On-Task/Engaged Behaviors: Please scan to observe a different student every 5 seconds. Record +/- for on-task/engaged/off-task behaviors observed. Once each student is observed, begin again until 5 minutes has passed.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60

Time Engaged (percentage of on-task behaviors): # of + marks/60: _____

GOAL: _____

*Adapted from Coaching Classroom Management Reproducible Form 5.2, Pacific Northwest Publishing 2010

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