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About the Journal

Founded in 2013, the Journal of Teacher Action Research (ISSN: 2332-2233) is a peer-reviewed online journal indexed with EBSCO that seeks practical research that can be implemented in Pre-Kindergarten through Post-Secondary classrooms. The primary function of this journal is to provide classroom teachers and researchers a means for sharing classroom practices.

The journal accepts articles for peer-review that describe classroom practice which positively impacts student learning. We define teacher action research as teachers (at all levels) studying their practice and/or their students' learning in a methodical way in order to inform classroom practice. Articles submitted to the journal should demonstrate an action research focus with intent to improve the author's practice.

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INVESTIGATING CO-TEACHING FOR IMPACT ON ACADEMIC ENGAGEMENT: BEST PRACTICES FOR ENGLISH SUBJECT LEARNERS IN A BILINGUAL ELEMENTARY SCHOOL

Kyle M. Daley
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Abstract While the benefits of co-teaching have been espoused by many, the literature shows a lack of data supporting its effectiveness in achieving student learning outcomes and improving engagement. Using a convergent mix-methods design this study investigated the effectiveness of co-teaching on student engagement by observing a 3rd grade English class in a bilingual-school setting. Through several observations the study measured the self-reported engagement of students in co-taught and non-co-taught lessons, as well as the class teacher's perspective on student engagement. The investigation found a lack of concrete support for co-teaching's effectiveness for improving student engagement.

Keywords: teacher action research, co-teaching, engagement, bilingual education

Introduction

The concept of co-teaching as an instructional model has developed out of the ideas surrounding inclusive classrooms and special education since the 1960's (Aliakbari & Nejad, 2013; Cook & Friend, 1995; Pappamihiel, 2012; Yopp et al., 2014). Today, this instructional strategy is an increasingly popular method within both special education and general education classrooms. The increased use of co-teaching can be linked to statutes found in the Individual with Disabilities Education Act supporting the concept of Least Restrictive Environment (LRE) and provisions regarding appropriate interventions prior to student referral for special education evaluation (Baca, 1990; Oh et al., 2017). In the general education classroom, it is seen as a means to best utilize teacher strengths, improve student motivation, vary instructional methods, and increase student learning (Magiera et al., 2006). Moreover, it is linked with other positive benefits for both teachers and students, such as lower student to teacher ratios, more instructional support, and more peer-to-peer learning.

However, there are shortcomings in the literature regarding the lack of concrete data supporting co-teaching's effectiveness on student learning outcomes and engagement (Alikbari & Nejad, 2013; Yopp et al., 2014). There also appears to be a lack of general research concerning how co-teaching can be best used with English Language Learners (ELLs) and their needs as a group requiring support and differentiation (Aliakbari & Nejad, 2013; Maryland Department of Education, 2012; Pappamihiel, 2012; Magiera et al., 2006). The literature review will look at the origins of the co-teaching methods, their most common manifestations, and gaps within the subject. Based on the limited data supporting the effectiveness of co-teaching on engagement and with a multilingual student body, the following question is proposed: How does co-teaching impact student engagement compared to non-co-teaching in a multilingual student environment?

Literature Review

Co-Teaching Strategies. Much of the literature agrees that each specific co-teaching method should adhere to four tenets (Cook & Friend, 1995; Pappamihiel, 2012). To be considered true co-teaching, the following cases must be met: 1) instruction is given by two professional educators, 2) both teachers must deliver instruction, 3) the classroom must be diverse and 4) the students must remain in one dedicated space. Since the method originated in the special education field, most of the literature references a pairing of a general education teacher and a special education teacher (Cook & Friend, 1995; Maryland Department of Education, 2012; Pappamihiel, 2012). The special education teacher or specialist originally acted in a supporting role to assist specific students. However, as co-teaching has become more commonplace in the mainstream classroom, where support is generalized and not necessarily targeted at specific students, teacher pairs may include any type of subject or specialist combination. In effect, the pairing of the professionals should reflect the diverse needs of the class and support inclusion for all students (Cook & Friend, 1995; Taşdemir & Yıldırım, 2017).

In terms of the instructional methods, the literature generally agrees that there are five co-teaching methods. None of the methods are deemed superior to any other, but in fact each would be more appropriate for certain types of lessons or tasks (Brendle et al., 2017; Chang, 2018; Cook & Friend, 1995; Taşdemir & Yıldırım, 2017). In each manifestation the two educators assume different roles of interaction with the class and one another. Cook and Friend (1995) outlined the strategies, starting with the One Teaching-One Assisting or Teacher Floater model. In this first of five arrangements, one teacher conducts the class while the other collects data or assists students. This first model is the most commonly used by teachers as it requires the least preparation, the least knowledge or experience with co-teaching methods, and it is often felt by teachers to be the most comfortable arrangement in terms of role identification (e.g. both teacher understand their roles and related expectations) (Magiera et al., 2006). Next, there is Station Teaching, where instructional content is divided into specific topics and organized in small group sections around the classroom. With this model teachers operate sections independently, so there is little issue with balancing teachers' roles in the classroom. However, there is a greater level of preparation needed to organize the lesson as well as the classroom. Furthermore, in this

model there is normally at least one group of students working independently. The third model is referred to as Parallel Teaching. In this model the class is divided in half with each teacher delivering the same content material. This method allows for better use of individual teaching styles, behavior monitoring, and learning support. In situations where smaller groups may be necessary, there is also the Alternative Teaching method. With this method, small groups (less than 50% of the class) of students work with one teacher while the majority of the class works with the other teacher. This method is useful for pre-teaching or re-teaching content, as well as for enrichment groups (Cook & Friend, 1995). The final version of co-teaching is referred to as Team Teaching. In this model both teachers give content input simultaneously to the class. This final method is the most difficult to implement according to the literature because of the high amount of co-planning, teacher-to-teacher confidence, and role comfort required (Aliakbari & Nejad, 2013; Pappamihiel, 2012).

Chang (2018) mentions that in recent years the One Teaching-One Assisting method and the Alternative Teacher method have been expanded upon and focused on a more specific teacher role. Specifically, the One-Teaching-One Assisting method has been broken down to emphasize the primary role of one of the teachers as either assisting or observing. In the case where a co-teacher is required to simply observe a class and for example collect data, then that would be considered One Teaching-One Observing. On the other hand, if the co-teacher was actively engaged in supporting student learning or classroom management in some way, then that would be considered One Teaching-One Assisting. The Alternative Teaching method has likewise been divided and made more specific or focused. It has been divided into a Supplemental Teaching method, which would be used for remediation purposes, and an Alternative Teaching method, which would be used to give instruction of the same content, but via alternate instructional approaches. The Alternative Teaching method could be considered useful for small group instruction of lower ability or higher ability students. The emphasis for the model would be on small groups of learners needing diversification in instructional methods or content input.

Disagreement: Co-Planning and Assessment. There appears to be disagreement in the literature over whether to include co-planning aspects within the general co-teaching model. Cook and Friend (1995) do not include co-planning in the definition of the model but do mention it as a useful practice. According to the authors, co-teaching is fixated on the issues related to instruction by two teachers in one classroom, whereas co-planning may or may not be a standard practice for a teaching team. They point out that the practice of teachers co-planning a single unit for different groups of students would not fall under the purview of co-teaching. However, according to several other authors co-planning is an integral part of the co-teaching process, with co-assessment considered a basic tenet on how to co-teach and achieve positive results (Brendle et al., 2017; Brinkmann & Twiford, 2012; Taşdemir & Yıldırım, 2017). This disagreement may be linked to the popularity of the One Teacher-One Observer model. As mentioned, this model requires little in terms of preparation on the part of the co-teacher, for it quickly and easily allows a teacher to identify their role and responsibilities in the class (i.e. lesson planning, assessment, instruction, and behavior management). Therefore, many teachers who find themselves in a

co-teaching situation with little to no notice or co-teaching experience may regard this model as a natural fallback method.

Gaps in Literature. The literature was limited and lacked definitive support for co-teachings effectiveness regarding student learning outcomes and engagement (Aliakbari & Nejad, 2013; Magiera et al., 2006). While certain subject or content areas, like reading and language arts, appear to be more receptive to co-teaching methods, several meta-analyses have shown mixed quantitative support for co-teaching (Aliakbari & Nejad, 2013; Pappamihiel, 2012). Additionally, much of the data has focused on the special-needs population, not the ESL/ELL population, multilingual students, or bilingual education settings. These gaps make sense as the co-teaching concept grew out of the desire to support and mainstream special needs children within the general student population (Pappamihiel, 2012). Hopefully, this study will add insight into co-teaching's impact on student engagement in the classroom, specifically multilingual student groups and bilingual educational settings.

Methodology

This study utilized a convergent mixed-methods research design. The mixed methods design incorporates both qualitative and quantitative data that are merged and analyzed to give stronger insight into a research question (Creswell & Creswell, 2018). The researcher felt that to understand the impact of co-teaching on student engagement it was necessary to measure both teacher and student perspectives. So, for this study, the researcher chose a mixed methods design to compare qualitative teacher data, which was collected through teacher interviews, and quantitative student data, which was collected through a reflective Likert Scale. Data were collected concurrently in a convergent design to compare collected data from the different sources.

Participants. The study included 25 participants (24 students and 1 teacher) from a 3rd grade English class in a German-English bilingual school. The 24 students included 11 boys and 13 girls, ages seven to eight. As a group, there were several home languages (L1s), though German was the majority L1. Eighteen out of the 24 students had German as an L1, while only three of the students spoke English as an L1. One student had recently relocated to the country and had limited proficiency in both English and German. This student was receiving weekly support in the form of pull-out ESL and German as a Second Language (DaZ) lessons. Those pull-out lessons were staggered so that that the student only missed 50% of their regular English/German lessons.

Co-teaching was a cornerstone of the school identity, and most classes were co-taught as a rule. The school focused on the benefits of lower student to teacher ratios, best use of teacher strengths, variety of instructional methods, and behavioral support. The school also supported the idea of teacher L1 continuity to assist student language immersion. This meant that whichever language the teacher designated as their school-L1 (German or English) was the language they used in the classroom, regardless of their own bilingual/multilingual abilities. In English language classes both teachers would only speak

English, and in German language classes both teachers would only speak German, with exceptions being made only in cases of serious student misunderstanding or situational urgency. In other classes, like Math, Science or History, teacher pairs were purposely scheduled to allow one English L1 teacher and one German L1 teacher. This bilingual pairing was done to support the English and German language learners simultaneously. Because of the importance of co-teaching at the school, the student participants had experienced some type of regular co-teaching in their previous lessons. The primary teacher was purposefully selected because of his previous experience co-teaching, and specifically his teaching English with this grade level (3+ years). Though he had had no professional development training with co-teaching methods, he had had several years of experience co-teaching at this school. The site location was the group's regular English classroom, and no changes were made to the class schedule.

Design. The study design used a convergent mixed methods approach (Demir & Pismek, 2018). Both qualitative and quantitative data were collected simultaneously. It involved seven 80-minute classes. At the end of each lesson student feedback was collected via a Likert Scale and a short teacher interview was conducted. Teacher interviews, while qualitative in nature, were converted into a quantitative measure to make engagement comparisons more effective. After giving feedback on the class engagement, the primary teacher was asked to rate the overall class engagement on a 10-point scale. This measure was compared in side-by-side analysis with the students' reflective feedback.

Materials. Student engagement was measured with a Likert Scale. This scale was based on the School Engagement in Mathematics Scale by Rimm-Kaufman (2010). The instrument was comprised of 10 items (see Figure 1 and Appendix A), each rated on a 5-point scale. For each item, students were asked to rate their level of agreement (1=Absolutely no, 2= No, 3= Not sure, 4= Yes, and 5=Absolutely yes) with each statement about the English class from that day. Question items measured students' emotional, social, and cognitive engagement. Some example statements included: 'Today I worked as hard as I could.', 'I talked about the lesson with other kids in class.', and 'Today I was bored.' Question 10 was reverse scored, so that higher scores on each item would coincide with overall higher lesson engagement. This final question was also used to evaluate the reliability of student answers. For example, if students filled out the scale indicating they were very engaged in the lesson they would have to mark every box in the extreme right column (see Figure 1) except for Question ten. If they marked Question ten in a contradictory manner, then the reliability of their answers would be considered questionable. Though the instrument designed by Rimm-Kaufman (2010) has been shown to be an effective measurement of class engagement, its reliability could have been weakened because of the self-reporting nature of the questionnaire, the multilingual environment / English level abilities of the students, the young age of the students, and the short time allotted for data collection (Rimm-Kaufman & Leis, 2015). The researcher introduced the scale to the students and reviewed each item in detail before the study began. The question items were explained and reviewed at several points throughout the study period to ensure participant understanding.

Mark the box that best applies to each statement	ABSOLUTELY NO.	No.	Not Sure.	Yeah.	YES!
1. Today I worked as hard as I could.					
2. I wanted to understand today's lesson really well.					
3. I tried to learn as much as I could.					
4. I thought a lot about English today.					
5. I talked about the lesson with other kids in class.					
6. I helped other kids with their work when they didn't know what to do.					
7. I shared ideas and materials with other kids in class.					
8. I saw other students helping each other in class.					
9. Class was fun today.					
10. Today I was bored.					

Figure 1: Student Engagement Questionnaire

Data Collection. The population under investigation met twice per week in two 80-minute blocks. The primary teacher conducted two classes alone, while the remaining lessons were planned and carried out utilizing the various co-teaching methods. To measure student engagement during lessons a Likert Scale questionnaire was given out and collected at the end of every class. Students were given five to ten minutes to complete the questionnaire. The items chosen for the questionnaire measured behavioral dimension of engagement. Students' responses provided feedback on their feelings of engagement, and their perception of the teaching methods.

In the 1st and 7th lesson the researcher acted solely as an observer during the lesson, while the content input and lesson tasks were managed by the primary teacher. Though this could have been considered a co-teaching exercise utilizing the Teacher-Observer model, these two lessons were considered the non-co-teaching element for the study and served as the basis for further comparisons. In the remaining five lessons all five models of co-teaching were utilized based on the planning needs of the primary teacher (i.e. One Teaching-One Assisting/Teacher-Floater, Station Teaching, Parallel Teaching, Alternate Teaching, and Team Teaching). The primary teacher and co-teacher/researcher normally used two co-teaching methods during a single lesson. The initial input and wrap-up/plenary would be conducted with the One-Teaching/One Assisting method or Team Teaching method, while the main class task would be planned around and utilize one of the remaining three models (i.e. Station Teaching, Parallel Teaching, or Alternate Teaching). The Station Teaching model was used twice in situations of content introduction or reinforcement. The Parallel Teaching model was used once in an assessment/feedback situation requiring student presentations and group discussions. The Alternate Teaching

model was used twice when lower-ability (LA), middle-ability (MA), or higher-ability (HA) student groups needed content reinforcement or enhancement.

After each lesson, an interview was conducted, and the primary teacher would relate their impression of the class's overall engagement and discuss any engagement issues observed during the lesson. Later the primary teacher would propose a value score for the class's engagement that day. This score was rated on a ten-point scale with ten being 'Fully engaged' and zero being 'Not engaged at all'.

Data Analysis. In this study two criteria were examined and compared: the teacher's perceived level of class engagement and the students' self-reported level of engagement. Data were compiled and analyzed manually by comparing average student-reported class engagement to teacher perceived engagement. Data analysis of the qualitative data was done by transforming the interviews with the primary teacher into a quantitative value. After each interview, the primary teacher was prompted to assign a level of class engagement for the day's lesson based on a 10-point scale, with 10-points being 'Fully engaged'. Data was analyzed to identify a correlation between teacher and class perceived engagement scores, changes in engagement levels, and differences between non-co-taught lessons and co-taught lessons.

As the self-reporting nature of the student questionnaire opened the possibility for issues of reliability in student answers the researcher made several adjustments during the data analysis process. In situations where students reported full engagement or full disengagement for questions 1-9 on the questionnaire, but for which they marked the reverse scored question 10 improperly (i.e. it contradicted the previous nine items), the researcher remarked the final question to reflect the student's obvious positive or negative attitude. It was felt by the researcher that this issue was caused by students misunderstanding the question item because of language issues, a lack of concentration or engagement during the questionnaire process, or purposeful mismarking. Additionally, in situations where students skipped or left question items blank, the researcher marked those items with the neutral value of three. This was done to keep student scores consistent. This issue was most likely caused by a lapse in concentration by the student or was related to improper formatting of the questionnaire.

Results

The dependent variables in this study were the levels of teacher perceived engagement and student self-reported engagement during co-taught and non-co-taught English lessons. All data were transformed by basing them on a maximum scale value of 50-points. The Likert Scale had a maximum point value of 50, with a maximum of 5 points allocated for each of the ten questions. The teacher's interview-based data, while collected on a 10-point scale with 10 associated with 'Full engagement', was transformed by a factor of five to make reliable comparisons between the two sets of data. The researcher designed this strategy of transforming the data by a factor of five so that both data groups could be easily compared. Outliers were evident and likely resulted from over and under reporting on the part of the

students. The researcher removed the scores of two students from the second data set to compensate for regular outliers and to create a more balanced description of mean scores for class-reported engagement (Figure 3). It was found that Student 1 had regularly over reported their scores, while Student 2 had regularly under reported their scores, for both students had improperly marked the reverse scored question number 10 on multiple occasions.

In the after-class teacher interviews a common theme of transition periods became apparent. The class teacher judged the students' ability to move around the classroom effectively as an element of engagement, following teacher instructions, and staying on task. This inner class movement was certainly an important issue for the class, as a great deal of instructional time could be lost when breaking into groups, if using the Alternate Teaching model, or when moving between stations when using the Station Teaching model. The class teacher pointed out, and the researcher concurred, that several specific students were often identified during these transition periods as being focal points of off-task behavior and slowing or disrupting the class's transition between lesson stages. The teacher made a point to discuss the issue of transitioning between groups and moving around the classroom with the class on several occasions. The teacher linked the issue of effective movement within the room to the achievement of lessons goals and to students' own time management.

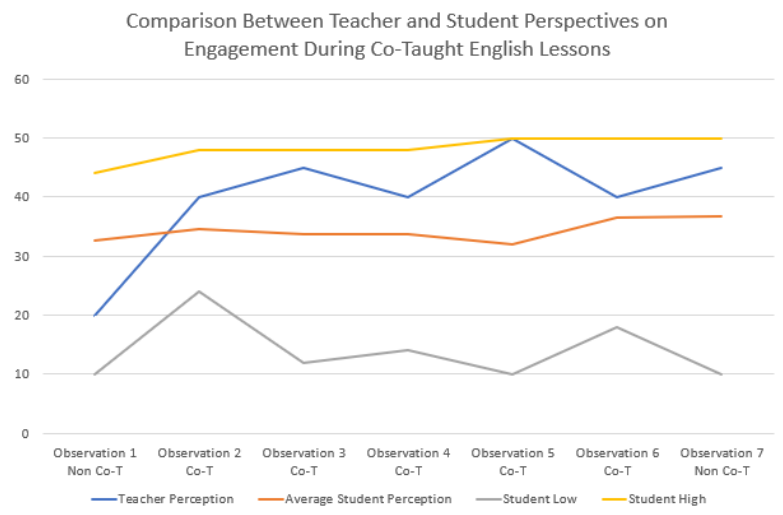

Figure 2: Reported Teacher and Student Engagement Levels Including Outliers

Figure two shows the initial data (Figure 2) containing the high and low outliers. In this presentation of data, the teacher and student-reported engagement levels only aligned once for Observation 5 and there only appeared to be a correlation between teacher-reported and student-reported engagement level increase or decrease between Observations 1 and 2, and minimally between Observations 6 and 7. Overall there was a

wide disparity between teacher perception and student perception on engagement. Before accommodating for outliers there appeared to be no pattern to support an agreement between teacher and class perceived engagement scores, a positive correlation between engagement levels, or a pattern of perceived engagement or disengagement between non-co-taught lessons and co-taught classes.

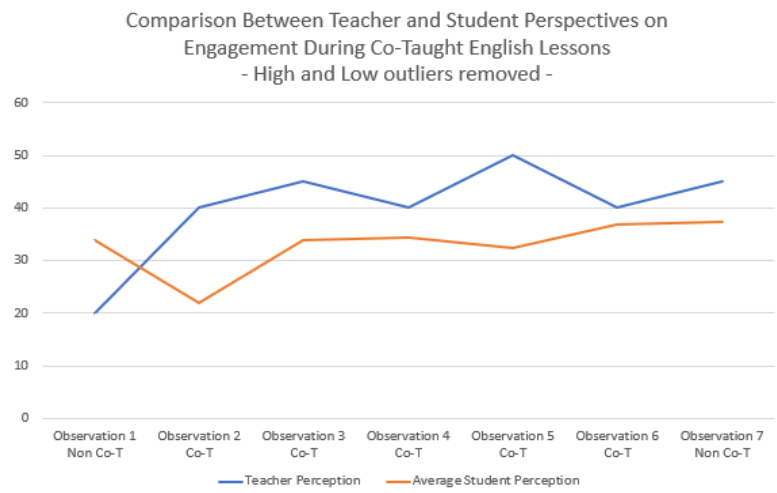

Figure 3: Reported Teacher and Student Engagement Levels – Outliers Removed

In Figure 3, the high and low outliers were removed. With the outliers removed, student and teacher-reported scores did not align. The closest alignment of scores were found for Observation 6, which differed only slightly when compared to the data in Figure 2. However, it was apparent in the data that some of the differences between teacher-reported engagement scores and mean student scores increased. This was most obvious for Observation 2, which showed a drop in the student mean score of 40% compared to that of the initial data set. Furthermore, the change in perceived engagement between observations, which the researcher felt should have reflected a general agreement between teacher and class on the overall level of student engagement was only seen between Observation 1 and 2, and Observation 6 and 7. A lack of continuity between the reported engagement of non-co-taught and co-taught lessons was seen in the great differences between the initial and final non-co-taught lessons, and the irregular peaks and valleys evident among the co-taught lessons. While there appeared to be a positive correlation between engagement levels after the first lesson, this was minimal.

What was also interesting was the relative difference in teacher and student scores between co-taught and non-taught lesson. For six out of seven observations the teacher-reported scores ranged between 40 and 50 points. Coincidentally, for six out of seven observations the student-reported scores also fell within a ten-point range, specifically between 30 and 40 points. This may show a disagreement between teacher and students on

specific engagement levels, but simultaneously it may indicate a general agreement between the two groups.

Discussion

This study found a lack of concrete support for co-teaching as a method of improving student engagement, as well as limited information related to the engagement of multilingual English learners. When data was adjusted for outliers, there was no agreement between teacher or students on engagement level scores, and the correlation of reported engagement levels between non-co-taught and co-taught lessons was minimal. This study can be linked to the work by Aliakbari and Nejad (2013) who cautioned on the use of co-teaching as popular model used by schools as a quick fix type method. Their study also showed a lack of student performance change based on these instructional methods.

Though there are many positive benefits from co-teaching, like lower student: teacher ratios, more instructional support, and more peer-to-peer learning, it has not been shown to directly improve student engagement or academic performance. The use of co-teaching as a buzz-word method or quick-fix solution to improve school perception or other issues could lead to instances of teachers being forced into co-teaching situations without having received any background on these instructional methods. This in turn could lead to negative perceptions of the methods that would further exacerbate unclear outcomes in engagement and academic progress. As mentioned previously, one issue that teachers must deal with, and which affects their impression of co-teaching is the balancing of roles among colleagues. Often the primary class teacher will view any co-teacher as an assistant, and naturally a co-teacher will most likely take on a supporting role if placed in another teacher's classroom. This is one reason why the One Teacher-One Assisting model is so popular. However, this negotiation of roles can be stressful for teachers, especially those that are not practiced or accustomed to co-teaching, and this can negatively impact their impression of co-teaching and their performance in the class.

Limitations

Limitations in the study included a short timeline, student absences, regular outliers, participant age, participant language level, and questionnaire formatting. The study only included seven observations because of the timeline available. A longer-term study, with more scattered non-co-teaching observations, may have produced more generalizable data. Student absences limited the amount of data collected and may have skewed results. The researcher noticed several regular outliers in the data. One participant regularly gave the minimum score possible on the Likert Scale questionnaires. While this data was certainly interesting and attested to the participants' feelings about the lesson, it nonetheless skewed results considerably. This issue may have been a result of the participant's age or language ability, as several other instances of over and under scoring were apparent from different participants. Occasionally, this over and under scoring was obvious because of the reverse scored question in the scale, which the students mis-scored. Additionally, participants habitually left questions unanswered in the questionnaire. This was a larger

issue at the beginning of the study but was persistent throughout the data collection period. Both issues may have been caused by unclear formatting of the questionnaire or poor printing conditions. Finally, self-reflection is difficult for adults and so it must be assumed to be extra difficult for children. The student participants in this study were young and so their experience with self-reflection was limited and may have influenced their ability to properly evaluate their level of engagement.

Implications

Looking forward, there is a need for further investigations into the measurable benefits of co-teaching related to learning progress and lesson engagement. Additionally, more research is needed to see how these methods could best be used to support bilingual or multilingual learners. It may be very interesting to see a more quantitative study looking into the effects of co-teaching on student learning compared to non-co-teaching, such as examining the differences between a co-taught class and a non-co-taught class on achieving a learning objective or lesson module and assessment. Though much of the literature describes the benefits of co-teaching (e.g. best use of teacher strengths, improving student motivation, variety of instructional methods, and increase student learning) it must be remembered that the majority of these studies were originally conducted within a special education mindset and so there is a need to expand the literature on all fronts in order to include various student groups and needs (Magiera et al., 2006).

Conclusion

Though this study did not show a strong positive link between co-teaching and measurable student engagement in a multilingual classroom, it does not detract from the benefits of the method. With an additional perspective on the possible limitations of co-teaching, teachers can have a better understanding of what the method can and cannot do. Furthermore, teachers and administrators can use this study to discuss more frankly the purpose behind using co-teaching in the classroom and the expected outcomes when it is utilized. This study may show that, though co-teaching is not a guaranteed fix for improving student engagement, when compared to non-co-teaching it is still a successful model with many benefits for both teachers and students.

About the Author

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Appendix A: Student Engagement Questionnaire

Mark the box that best applies to each statement	ABSOLUTELY NO.	No.	Not Sure.	Yeah.	YES!
1. Today I worked as hard as I could.					
2. I wanted to understand today's lesson really well.					
3. I tried to learn as much as I could.					
4. I thought a lot about English today.					
5. I talked about the lesson with other kids in class.					
6. I helped other kids with their work when they didn't know what to do.					
7. I shared ideas and materials with other kids in class.					
8. I saw other students helping each other in class.					
9. Class was fun today.					
10. Today I was bored.					

- All items scored on a 5-point scale (1=Absolutely no, 2= No, 3= Not sure, 4= Yes, and 5=Absolutely yes)
- Item 10 reverse scored
- Note: Items based on Rimm-Kaufman (2010) Student Engagement in Mathematics Scale (SEMS).