

Investigating Co-planning and Co-teaching in Higher Education Statistics

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by

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Abstract

Co-planning and co-teaching are relatively new in comparison to the field of education. Initially it was used as a method of collaboration between general education teachers and special education teachers. In recent years, the math education department at East Carolina University has pushed for student teaching to implement the co-teaching model in their internships.

As educators, we should strive to implement new methods that can assist with creating an environment that promotes growth within new educators, and co-teaching is an accessible and effective method. My findings will illustrate the benefits of implementing a co-teaching model regarding the development of my own teacher identity, course development, and the effect that co-teaching has on students.

Introduction

For my signature honors project, I wanted to prepare a thesis to illustrate my investigation of the benefits of co-planning and co-teaching in a higher education classroom. Studies have shown that students entering mathematics programs and mathematics education struggle with statistics. My honors project prioritized finding ways to increase the statistical knowledge of East Carolina University college students, learning how to locate and evaluate resources for teaching statistics, and developing a co-planning and co-teaching relationship with Dr. Grady.

Throughout this project, we collaborated to resolve the statistical gaps of the math education majors in our course, increase teacher identity in the math education majors, and improve the introductory statistics course for all math majors. We approached these goals by working together through co-planning and co-teaching. Combining the efforts and perspectives of an experienced professor and an undergraduate student provided this project with a unique approach and an effective outcome. My research includes a literature review, summary of teacher identity development, and information regarding the environment of the study and anonymous assessment data from the students in our co-taught course. As a secondary math education major, this research was appealing for continued the accumulation of proof on the benefits of co-teaching and assisted in developing my identity as an educator.

Literature on Why Use Co-Teaching

Education is a field full of constant adaptation and growth, for there have always been new ideas and innovative methods to pursue. In recent years, there has been a movement to discover an improved form of student teaching. Creating better methods of student teaching is

beneficial, for efficiently training educators is a fruitful endeavor. All communities need skilled teachers to pour into their children, so improving methods of student teaching will help to ensure that beginning teachers can start their career with experience and confidence.

Through methods like co-teaching and co-planning, student teachers can be personally trained by a more experienced educator and have the opportunity to discover their personal teacher identity before entering the classroom full-time. When teachers collaborate and form high functioning teams, the whole is greater than the sum of its parts, and their collective efficacy—their effectiveness—is increased (Eells, 2011; Knowapple, 2015) (Honigsfeld, 2018)

Co-teaching requires a commitment to the evolution of the collaborative process (Dieker, 1996). The concept of co-teaching is relatively new when compared to the history of education. Co-teaching was established to create a more innovative form of student teaching, and research has found that the process is effective, but it requires dedication from everyone involved.

Before co-teaching can begin, the administration needs to be completely on board with the process. Co-teaching is a long and detailed process, so without the support of administrators the process cannot happen. Furthermore, the teachers need to be trained. Co-teaching is not commonplace, so the teachers involved will need to be trained on how to start the process. When co-teaching, all members of the triad (cooperating teacher, teacher candidate, and university supervisor) are provided specific information about the roles of each member, expectations for the experience, co-teaching and co-planning approaches and strategies for how to build a strong partnership (Bacharach, 2010). This training is a form of professional development. St. Cloud University has been on the forefront of the co-teaching movement, and they established seven steps with the co-teaching method. “These include: (a) One teach, one observe [together they decide on a specific focus for the observation]; (b) One teach, one assist; (c) Station teaching; (d)

Parallel teaching; (e) Supplemental teaching, (6) Alternative or differentiated teaching; and (7) Team teaching.” (Morton, 2015). Learning how to implement each step takes training, so before collaboration can begin- there needs to be preparation.

When co-teaching is being enacted, both teachers need to have the same understanding of the process, the time it requires, and the dedication it requires. Furthermore, the administration needs to understand that co-teaching and co-planning relies on planning time. Co-teaching and co-planning are not an easy process, so the teachers involved need to be provided with sufficient time to prepare lesson plans and teaching strategies.

Before the class begins, the co-teachers need to establish common standards on grading, discipline, communication, teaching styles, and responsibilities (McCall, 2018). Each of these aspects is critically important to the partnership’s success. When the educators are inconsistent with these issues, problems arise quickly. Co-teachers are required to be intentional with their actions, for when one aspect of teamwork falls short- the others begin to fall through as well.

Most importantly, co-teachers need to be aware of delegating responsibilities. Although the experience of the two educators is different, both of their opinions and skills are valuable. Co-teaching is designed to insight collaboration, so when one teacher is struggling the other can help and learn from the experience. This process requires lots of teamwork, and partnership is the key to success (Heaton, 2011). It is structured to engage the less experienced educator just as much as the seasoned educator. Both teachers need to be equally involved with appropriate classroom management, discipline, and grading. When co-teaching, educators need to provide a united front. The students need to see that their authority is consistent with their knowledge and abilities.

Co-teachers need a relationship with one another. The process of co-teaching takes a large amount of planning time and collaboration, for it is necessary for the two teachers to be united in teaching styles. Without a strong relationship between the educators, animosity and other miscommunication-based problems can arise. The teachers involved in this process need to be effective communicators. When disagreements and classroom issues arise, the co-teachers cannot stand firm together without establishing a relationship first. The teachers' success in forming a relationship with each other is necessary to continue progressing towards the students' learning experience (Weiss, 2015).

The key to effective co-teaching is consistent clarity. There needs to be clear communication between the administration and the educators. When everyone involved in the process is informed, it establishes less room for error in the co-teaching process.

Co-teaching is a new concept in the education community. Overall, there is not much research on it. Yet, regardless of the quantity of the research, the contents are full of excellent reviews. When co-teaching is done correctly, it is an excellent tool for growth. Co-teaching has proven itself to be wholistically effective because it benefits everyone involved. A seasoned educator can develop their skills, for no matter how long you have been teaching, there is always more to learn. Meanwhile, the new teacher is experiencing a fully involved, hands-on, method of student teaching while being provided with a controlled form of classroom experience. The most important benefit of all is that all students can gain from this experience as well. Co-teaching is a dynamic process which can be especially beneficial for students with disabilities. By blending the content knowledge and experience of two educators, students with varying abilities are provided with the opportunity to become engaged in the classroom (Mageria, 2005). Having two educators can provide the students with more personal interaction with a teacher. In fact, students

in co-taught classrooms have reported that the presence of two teachers provided students with “additional and timely support in meeting their individual learning needs” (McCall, 2018). When there is just one teacher, the educator can sometimes become overwhelmed and find that they do not have time to reach every student personally. But with two educators, the students can benefit from having more help available.

Co-teaching is a worthwhile endeavor, for it promotes growth among all levels of learners. Exposure to new approaches, new methods, and new philosophies can help even the most experienced teacher keep “green and growing.” (McCall, 2018). It is critical that as educators, we are always learning. Without constant change and improvement, methods of teacher education will become outdated and less effective. As teachers, the only way to keep up with the development of our world is to constantly find ways to improve methods of teacher education. Through time and dedication, co-teaching can be a process that fosters a new generation of educators and simultaneously cultivates seasoned educators.

Analysis of Teacher Identity Development

Throughout the year I worked co-planning and co-teaching, I kept documentation of how the process affected my feelings about working in education and my teacher identity. As a result of the current environment surrounding education, it can be a difficult and discouraging field. In my time at East Carolina University, trying to decide whether teaching will be my long-term career has been a constant battle. As an undergraduate, it is difficult to imagine what my career will look like. I decided in high school that I wanted to be an educator. Since then, I feel like every time I discuss my plans with other seasoned educators I am met with stories of burnout, disrespect, and hopelessness. As a future educator, I can testify that it is not encouraging.

Entering this partnership with Dr. Grady has been assisted in encouraging me to continue to dive into education and learn who I am as a teacher.

This process started in the Fall of 2021. As a member of the Honors College, I am required to do a Signature Honors Project. After learning about co-teaching in my education courses, I approached Dr. Grady and asked if I could participate in her continuing research on co-teaching. Together we co-taught a statistics course targeting math education majors. The Fall of 2021 was dedicated to a literature review and a report for the Institutional Review Board (IRB). Spending so much time reading about co-teaching was eye-opening. Most of the previous research done on co-teaching was done between a general education classroom teacher and a special education teacher. After reading different studies on co-teaching, it was difficult for me to visualize a co-teaching relationship between Dr. Grady and me. At the time of our research, I had just taken this statistics course. So, the thought of teaching it, especially with a professor, was intimidating. Furthermore, out of the countless articles I read, none of the studies included a co-teaching model where the co-teachers were an undergraduate and a tenured professor. Thankfully, Dr. Grady had a vision for the course and was able to encourage and guide me through the co-planning and co-teaching process. I felt that I was far too underqualified to co-teach with her. However, Dr. Grady consistently reminded me that co-teaching was a valuable partnership because of the variety of perspectives and experiences that we can both bring to the table.

On top of the literature review and IRB, we used the fall to plan and reflect on how we could improve the course. Up until this point, I had never researched course resources or planned a course. Dr. Grady introduced me to various resources and asked me to begin looking into new sources of content. She reviewed many textbooks with me, yet during this stage it started to feel

overwhelming. Picking course materials was difficult. I was not sure what I needed or where to look for it. With Dr. Grady's guidance, it became an achievable task. It was disheartening to feel like I could not bring anything to the table regarding resources, yet she reminded me that I was a valuable resource. Since I had just taken the course, I was able to talk to her about the assignments from a student perspective and issues with the previous textbook. I knew what did and didn't work with the materials and projects because I had just done them. Being capable of contributing assisted with building my confidence. As we continued to build the course, I became more confident with my identity as a teacher. But as the spring semester grew closer, I was confident in my planning skills but was hesitant to present our content. We used the co-planning model developed by a variety of professors at ECU. We began with one plan one assist. Dr. Grady would plan most of the lesson and I would add an activity or make suggestions. By the end of the semester, we were consistently team planning. Which means we were both equal and active contributors (Grady, 2019). We planned every lesson together, finding new activities and methods of teaching the content.

After spending a semester co-planning, I was still hesitant to begin co-teaching. I knew many of the students in my class, so I was intimidated by the thought of teaching the content to my peers. For the first few weeks, I simply sat in the corner of the room and observed. I planned with Dr. Grady and I knew what we were teaching that week, but I was too nervous to step into my role as a co-teacher. At the time I felt like an imposter. Thankfully, my mentor gave me time to adjust and then gave me tips on how to jump in. Despite my reluctance, Dr. Grady told me that I needed to start circulating the classroom. The students knew I was there but did not see me as a co-teacher because all I did was sit and listen to Dr. Grady like they did. So instead of timidly observing, I timidly circulated the classroom and assisted wherever I could. Being a co-teacher

opened my eyes to the gaps in my understanding of our content. When students asked me questions, I often had to work them out with them. At first, I saw this as an embarrassing weakness. I was the teacher, yet I did not have all the answers. But being honest with my students was an advantage. Being sincere with my students resulted in their respect. My biggest insecurity regarding teaching was eased, and from there the co-teaching process ran even more smoothly. Throughout the course I became more confident in who I was as a student and as an educator. Working side by side with a tenured professor helped to build my confidence. Station teaching, parallel teaching, and team teaching were all methods within the process of co-teaching that assisted with building my confidence and teacher identity (Grady, 2019). These methods of co-teaching worked well for our partnership and co-teachers and the relationship we had with our class. The beauty of the different methods of co-teaching is the variety. The different stages allow the co-teachers to find a method that works best for their partnership, and by using parallel and team teaching I felt confident in stepping into my role as a co-teacher. I know I will be an excellent educator, but it will not be a result of knowing everything. I often must review and practice content, and I will have to continue this practice as I teach.

This experience taught me that students value transparency over omniscience. They would much rather have a teacher who is honest with them and works with them to learn things than a teacher who knows everything all the time. I have taken this same philosophy into my student teaching experiences and have been met with the same levels of success. Working with Dr. Grady has been pivotal in discovering who I am as an educator. Her encouragement and guidance have shown me that I do not have to be a perfect educator. I try to make everything I do perfect, yet I consistently fall short. My shortcomings can be used to my advantage. Connecting

with students is essential for effective instruction, and showing my students that I have to work as hard as they do helps to build those connections.

At the beginning of this co-planning and co-teaching process I took two assessments: Teacher of Mathematics Identity Scale (Willis, 2021) and the Self-Efficacy to Teach Statistics in High School Survey (Harrell-Williams, 2019). The first survey was to gauge my confidence teaching statistics and one for my sense of teacher identity in the field of mathematics. The results of my pre and post survey were very different. On the pre-assessment I claimed that I was not comfortable in the community of mathematics and that I did not identify as a teacher of mathematics. But in the post survey I felt that I belonged to the mathematics community, and that I am a highly capable math teacher. I no longer feel inadequate as a math educator, and my teaching creates a positive change in my student's life.

The second survey was to assess my feelings regarding my ability to teach statistics, and it had similar results. For example, on the pre-assessment, when I was asked how confident I was teaching how to assess the fit of a particular model informally by plotting and analyzing its residuals, I said that I was not confident at all. Yet in my post survey, I said I was confident I could do it. Although I do not currently know how to analyze residuals, I am confident that if it was a subject I needed to teach- I could. I am more than capable of using my resources to ensure that I am prepared and capable of teaching anything that my students need.

Classroom Environment and Student Data Analysis

For our research, we worked in a undergraduate classroom. There were nine students in the class. These students were either secondary mathematics education majors or middle school math majors, and they were in their sophomore or junior year of college. This course was a

statistics course targeted for educators. The course was MATE 2700 and we taught it in the spring of 2022. The Fall of 2021 was spent working on an IRB, literature review, and course planning. The IRB was necessary to include the students in our research. We had to submit this to proceed with our research.

Our goal was not to just teach the course, we wanted to assess the effect that co-teaching had on our students. We needed to know whether students liked or disliked the experience and if they benefited from it or if it hindered them. When the course was over, we provided an optional anonymous survey regarding their perspective on co-teaching in their class. This survey was given after their final and was not viewed until after grades were posted. The results were overwhelmingly positive. I created a table to summarize the results of our surveys. Based on the data we gathered, eight out of nine students agreed that they wished more of their classes had two teachers. All our students disagreed that co-teaching creates confusion. Eight out of nine students agreed that co-taught classes are more valuable than a course with just one teacher and that co-teaching is helpful. Our students unanimously agreed that it was beneficial for them to see their two teachers collaborate and work well together. eight out of nine students agreed that they learned better with two teachers and co-taught classes assisted in developing their critical thinking skills. Dr. Grady and I felt that the class went well. We developed a unique relationship throughout our partnership, and our students seemed receptive to our co-teaching model. The results of the anonymous survey assisted in solidifying our belief that the students benefited from this model as much as we did.

Conclusion

The data we received proved that our course was successful for everyone involved. Our goal was to analyze how the enactment of a co-planning and co-teaching model in higher

education statistics would assist with developing my teacher identity and benefit the students involved. Conducting this research with Dr. Grady greatly influenced the development of my identity as an educator. I gained more confidence in my abilities to teach and plan a course. As a result of working with me, Dr. Grady was able to obtain a new perspective to the course and have a stronger connection to her students. Most importantly, our students enjoyed and benefited from the co-teaching process. The co-teaching model provided the students, Dr. Grady, and I with a unique opportunity to grow. Further proving the value of this classroom model, regardless of the classroom it is enacted in.

Results

	I wish more classes had two teachers	It is hard to have two teachers at the same time	I enjoyed 2 teachers	I learned more having 2 teachers	Co-teaching creates confusion	Co-taught classes are more enjoyable	In co-taught classes students develop critical thinking skills	2 teachers seem comfortable sharing responsibilities teaching together	I would rather learn with just one teacher	Co-taught classes are more valuable	It is helpful for students to see their teachers work as a team	Coteaching is helpful
Strongly disagree		7			5				3			
Somewhat Disagree	1	2		1	4	1		1	6	1		1
Somewhat Agree	2		1	2		1	2	2		3	1	4
Strongly Agree	6		8	6		7	7	6		5	8	4

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