

Peer Teaching for Science in an ESE Self-Contained Classroom

Reflection

Cynthia Welch

ESE K-5 Teacher

Sugarloaf School, Monroe County, Florida

February 11, 2011

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By Cynthia Welch

This paper describes a peer teaching project in a classroom situation that consists of seven students with varying exceptionalities and chronological ages. Three of the students are students with Autism ages nine, ten, and eleven years old. One Student is very verbal; the second student demonstrates echolalia. The third student has language but chooses not to use it. The fourth student is eleven years old and a student with developmental disabilities. The fifth student is eight years old, non-ambulatory and non-verbal with cerebral palsy. The sixth and seventh students entered my classroom late in the year from a general education classroom that was an unsuccessful experience for them. Both of these two students are students with behavioral challenges. One of the students is ten and the other is nine years old. No data were collected on the two students who joined the classroom after the project was underway. Six out of the seven students are male.

There are three adults in the Exceptional Student Education (ESE) self-contained classroom. One paraprofessional is one on one with the non-ambulatory student and the second paraprofessional is assisting me with the other six students. The third adult is the Autism/ESE educator.

We are fortunate to be a Pre-K, elementary and middle school combined school. Another bonus is that we are situated on the beautiful Summerland Key in the Florida Keys.

#### Project Description

The problem was that ESE students have difficulty with following directions to complete a science project. They have difficulty following steps in sequential order. My goal was to provide peer teachers to each ESE student to increase their level of support for greater success.

My instructional question was to determine if peer teaching would assist the ESE students in preparation for inclusion into the general education science classroom. This would be more likely if my students a) could demonstrate improvement in sequencing skills and b) could complete their science projects. By observation, I am looking for c) improved social skills, especially d) stabilized tolerance levels of both the general and special needs students through this project. These framed my research questions.

To answer the questions and report on this project, I utilized a case study approach due to small number of students and to the level of individualization that needed to occur. Pseudonyms are used for students' names in this report.

More generally, beyond the scope of the research project, my hope is that peer teaching can form friendships. Peer teaching opportunities can occur in the general education class so that my ESE students gain greater inclusion learning opportunities with their peers.

Education is ever flowing and this project was no different. The initial determination of which peer teacher was going to work with which student took three weeks. During that time we lost one peer teacher and gained one new student. By the middle of the project we had gained another ESE student and at the tail end of the project gained a new peer tutor and another ESE student. At one time or another during the project period (August 30, 2010 to December 17, 2010) seven ESE students and five general education tutors were involved. A project schedule can be found in Attachment C.

#### The instructional process

The tutors were selected by their general education teachers. The groups of middle school students that our class interacted with were from the junior honor society. The schedule of days the middle school students could work in my classroom was totally dependent on their schedule availability. It was determined that it would be during their recess time two days a week. It was determined that Wednesday would focus on sequencing steps and matching sentences to pictures. The Friday session was for the actual science experiment. Each Friday was a rotation of a science experiment by each student. The presentations began being very scripted and moved into a more natural presentation.

It took three weeks for each peer teacher to identify a student they felt was a good match for the project. I modeled a science lesson for two consecutive weeks to establish the format of presentation and peer teacher direct interactions with their selected student. There was no participation from the paraprofessionals on Science project day.

The tutors completed the Form B Peer Teacher Survey almost every Friday. I completed the data Form A during the science project and provided additional support of verbal cues to the peer teachers. (See the Attachments for these forms.) Unfortunately, the paraprofessionals had their lunch breaks during that time so their support was not available. Initially, it was challenging but as time went by, it became easier. This showed that consistency was valuable for predictability. Repetition allowed for embedded skills so that the learning environment was organized and ready to receive new information.

## Data Gathering

Data were collected on each ESE student during the science experiment. I was looking at the degree of prompting necessary to complete the expected number of steps to complete the science experiment. I was collecting data on the number of sequenced steps completed correctly. I was monitoring if the ESE student was listening to the peer teacher for directions, waiting to hear the directions or comment from the peer teacher, and following the directions. I was interested in collecting data as it related to waiting to take turns, if the science experiment involved many steps that could be rotated among all participating ESE students. Form A (see attachments) delineated what particular skills were being observed during the science lesson. I provided additional verbal cues to the peer teachers during the course of the experiment.

## The data

We successfully completed six science projects. Three science projects were completed in October. One science Project was completed in November. Two science projects were completed in December.

## Luke

Luke is an eleven year-old student with intellectual disabilities. The data reflect that Luke and his peer teacher worked well together. Luke was successful in the majority of the areas of concern with the level changing from independent to needing verbal cues later in the project. The reason for the need for verbal cues was that the science projects that were being introduced were becoming more challenging and stretching Luke's level of independence.

Date	Student First name	Level of support (Verbal, gestural, hand over hand, or ind.)	Successful sequencing of # steps (Ex. 5 out of 10)	Listen to peer teacher (+ or -)	Follow directions (+ or -)	Waiting (+ or-)	Taking turns (+ or - )
10/8/10	Luke	Ind	5	+	+	+	+
10/15/10	Luke	Ind	10	+	+	+	+
10/22/10	Luke	Ind	10	+	+	+	+
12/10/10	Luke	verbal	10	+	+	+	+
12/17/10	Luke	verbal	10	+	+	+	+

Ted

The data reflect that Ted continued to need verbal supports to be successful. He is a nine year old student with Autism and demonstrated a greater level of compliance to the requests even though he needed a greater level of verbal supports from his peer teacher. He typically wants to go first, making others wait, but did an outstanding job of waiting his turn and taking his turn.

Date	Student First name	Level of support (Verbal, gestural, hand over hand, or ind.)	Successful sequencing of # steps (Ex. 5 out of 10)	Listen to peer teacher (+ or -)	Follow directions (+ or -)	Waiting (+ or-)	Taking turns (+ or -)
10/8/10	Ted	verbal	5	+	+	+	+
10/15/10	Ted	absent					
10/22/10	Ted	verbal	10	+	+	+	+
12/10/10	Ted	verbal	10	+	+	+	+
12/17/10	Ted	verbal	10	+	+	+	+

Bret

The data reflect that although Bret was absent several of the sessions, he made tremendous gains in his interest in the science projects evidenced by the movement in his needed level of support being at hand over hand paired with verbal to just a verbal support. Although he followed directions and completed the sequences quite well, he demonstrated difficulty in the area of listening to his peer teacher, waiting, and taking turns. This was because he found activities that sparked his interest. Bret is an eleven year-old student with Autism who escapes interactions with peers, adults, and activities. Awesome☺ gains☺!

Date	Student First name	Level of support Verbal, gestural, hand over hand, or ind.)	Successful sequencing of # steps (Ex. 5 out of 10)	Listen to peer teacher (+ or -)	Follow directions (+ or -)	Waiting (+ or-)	Taking turns (+ or -)
10/8/10	Bret	absent					

10/15/10	Bret	absent					
10/22/10	Bret	P & I	P & I-10	+	+	+	+
11/12/10	Bret	P	10	+	+	-	-
12/10/10	Bret	verbal	10	-	+	-	+
12/17/10	Bret	verbal	10	-	+	-	-

### Lucy

Lucy is a seven year old student with physical impairments, so she will continue to need hand over hand assistance to complete the science projects. Her likes and dislikes for the project came out in her unwillingness to wait her turn or take turns. If she was not particularly interested in the activity or was pre-occupied with wanting her choice of activity, she would demonstrate difficulty waiting for her turn or taking turns by vocalizations and extreme body movements. When she was interested in the activity presented, she would smile, reach for items, and allow the peer teacher to utilize hand over hand to complete the steps to the activity.

Date	Student First name	Level of support (Verbal, gestural, hand over hand, or ind.)	Successful sequencing of # steps (Ex. 5 out of 10)	Listen to peer teacher (+ or -)	Follow directions (+ or -)	Waiting (+ or-)	Taking turns (+ or -)
10/8/10	Lucy	Hand over hand	5	+	+	+	+
10/15/10	Lucy	Hand over hand	10	+	+	+	+
10/22/10	Lucy	Hand over hand	10	+	+	+	+
11/12/10	Lucy	Hand over hand	10	+	+	-	-
12/10/10	Lucy	absent					
12/17/10	Lucy	absent					

### Max

Max, age ten, began participation in the science projects with needing hand over hand to complete the science projects successfully to complete the activities, moving to using verbal cues by the end of the project. The last two science projects, he was having difficulty listening to his peer teacher because he was eager to do the project.

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This report was supported by a Hoenny Center action research grant.

This ESE student demonstrates challenging behaviors (which includes hitting, kicking, clearing the table of items, screaming, out of seat and charging at others, and/or sitting on the floor) to avoid activities. He enjoyed each activity and actively participated and engaged. WOOOHOO☺!

Date	Student First name	Level of support (Verbal, gestural, hand over hand, or ind.)	Successful sequencing of # steps (Ex. 5 out of 10)	Listen to peer teacher (+ or -)	Follow directions (+ or -)	Waiting (+ or-)	Taking turns (+ or -)
10/8/10	Max	Hand over hand	5	+	+	+	+
10/15/10	Max	Hand over hand	10	+	+	-	+
10/22/10	Max	Hand over hand	10	+	+	+	+
11/12/10	Max	absent					
12/10/10	Max	verbal	10	--	+	+	+
12/17/10	Max	verbal	10	-	+	+	+

### Peer Teacher Surveys

The peer teachers felt that they were helping the students. In the beginning of the project; they felt like they needed more guidance from me; however, by the close of the project, they were feeling comfortable with their interactions. The students felt that the ESE students were making weekly gains in engagement and attention to the experiment. When the peer teachers completed the question on the survey about what was the positive outcome about the lesson? Each of the peer teachers reflected on the students and their accomplishments. One particular need the tutors expressed was my assistance with setting up which was challenging with keeping the ESE students engaged in their activity prior to the science activity.

Date		Good Match	Student Engaged	Learning Gains	Positives	Negatives	How Can Teacher Assist?
10/8/10	Peer Tutor #1	Good match with both students	Yes, fully engage and fully participate	Learning about science Improving their reading	Communicate with friends Improved reading	-	Help me with communicating more effectively with the students
10/8/10	Peer Tutor #2	yes	It is difficult for my student to stay fully engaged	I am not sure if there are learning gains but feel that there are some	The soda was a motivational item	-	Doing a science lesson that everyone would like to do
10/8/10	Peer Tutor #3	yes	He is focused most of the time.	Learning to focus more	He listened to the directions that were given	To increase interactions with the students	+Assist the peer tutors in setting up the science lesson.

Date		Good Match	Student Engaged	Learning Gains	Positives	Negatives	How Can Teacher Assist?
10/15/10	Peer Tutor # 1	Absent					
	Peer Tutor # 2	Yes, since one tutor was absent I got to see strengths and weaknesses of the	Two of the three of my students stayed engaged		One student says Hi to me and waves. Another student waves her arm at me when she sees me. Another	-	Working with the most challenging student

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		other students			student verbal speaks when I come in the room.		
10/15/10	Peer Tutor # 3	yes	Yes engaged		To follow instruction to work cooperatively as a group	-	Assisting with set up

Date		Good Match	Student Engaged	Learning Gains	Positives	Negatives	How Can Teacher Assist?
10/22/10	Tutor # 1	Did not turn one in					
10/22/10	Tutor # 2	Did not turn one in					
10/22/10	Tutor # 3	yes	Yes, engaged		Increased focus	Group activities	-

### Tutoring strategies ■

The peer tutors plan to continue this commitment for the remainder of the school year. The peer teachers recognize the need for on-going opportunities for the skills to be embedded in their daily routine. The peer teachers also recognize that retention is an issue. The peer tutors were a witness to observing short term memory issues during a science experiment. The peer tutors come twice a week. One day a week is focused on Science and the other day a week is focused on social skills during Language Arts activities. This provides an opportunity to observe transfer of skills and generalization of skills.

### What were the Challenges?

1. Getting the peer teachers to complete the evaluation weekly was a challenge. I recommended that the science project times may need to be shortened to provide sufficient time for clean up and completion of the evaluation.
2. Peer tutors had difficulty remembering who had a science project on which Friday. It was decided that a back-up person would be identified in the event someone is absent.

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3. The number of Fridays that ended up being Professional Days (no school), holidays, or half days interrupted the flow of the peer teaching interaction. Due to the two new students, this changed the dynamics of the class, and this prevented me from having the ability to video tape a science project.

4. The timing ended up that the science projects had to be scheduled when I was short paraprofessionals due to their need for their lunch break. Scheduling is often difficult and the ideal is never the reality. We worked together to come to a compromise. The compromise was having the students come during their recess which was when I was short handed due to the lunch schedules for the paraprofessionals. In the end, it worked out fine once the peer tutors were comfortable with the ESE students and vice versa.

### Conclusions and comments

The following expectations emerged from the research questions of interest in my proposal:

1. My students will demonstrate improvement in sequencing skills.
2. My students will complete their science projects.
3. Improved social skills, especially stabilized tolerance levels, of both general and special education students will be observable through this project.

All ESE students successfully mastered listening to the peer teacher, following directions, waiting their turn, and taking turns. The level of support did not change for the student with physical impairments; she continued to require hand over hand. The student who typically was resistive to engagement in the past participated with a smile and accepted hand over hand assistance to complete the science project. Four students were able to read the steps independently, complete the steps independently and answer some high knowledge questions posed by their peer teacher.

The ESE students, as well as the peer tutors, improved in social skills and stabilized tolerance levels. This was evidenced by the ESE students demonstrating the following observable behaviors:

- Increased eye contact.
- Listening to suggestions and following through from the peer teacher's recommendation.
- Attempting to use high level thinking to answer questions like: "Why do you think this is happening?"
- Increased recall of the steps involved in the science project. This transferred to language arts activities by following the verbalized steps presented by the peer teacher to the ESE student without demonstration of oppositional behavior.
- Tolerance of new persons in their self-space.

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- Seeking the learning opportunity. ESE students often asked me if this was the day their “friends were coming” or “Are we going to do a science project today?”

The peer tutors improved in their social skills and stabilized tolerance levels. This was evidenced by the peer tutors demonstrating the following observable behaviors and comments:

- Initially, their interactions were unnatural and scripted. Through the course of the project the peer tutors became more improvisatory in their interactions.
- The peer tutors expressed that they were excited to come to my class.
- At the holidays, there were exchanges of holiday gifts on the part of 50% of the peer tutors.
- While this project was academically based for my students; it gave the peer tutors time to escape from their highly intensive academic day.
- The peer tutors provided the high positive energy to facilitate completion of activities.
- Body language was rigid in the beginning and is now very relaxed.
- The peer tutors asked where particular students are if they are not in the room when the student peers arrived in the classroom. The peer tutors' interactions facilitated reciprocity in student communications.
- As a result of the peer tutors' involvement, it stretched the ESE students in their performance.

In closing...

The project facilitated friendships. My ESE students looked forward to the peer teachers coming into the classroom. My students called them their “friends.” While several of my students are not ready to go into an inclusion setting in the general education classroom, the inclusion possibility can be successfully tested by bringing peer teachers into the ESE classroom. I am thrilled that the peer teachers want to continue coming twice a week for the remainder of the school year.

I have a new vision as a result of this project. I would love to gain a grant to utilize peer teachers for up to two weeks in an over-night camp experience during the summer.

Attachment A

Date	Student First name	Level of support (Verbal, gestural, hand over hand, or ind.)	Successful sequencing of # steps (Ex. 5 out of 10)	Listen to peer teacher (+ or -)	Follow directions (+ or -)	Waiting (+ or-)	Taking turns (+ or -)

Attachment B

Form B

Peer Teacher Survey

Name \_\_\_\_\_

1. Do you feel you are a good match with your peer? And

why\_\_A. \_\_\_\_\_

B. \_\_\_\_\_

2. Is your peer staying engaged in the lesson? \_\_\_\_\_

\_\_\_\_\_

3. If not, why not?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. What learning gains are being made by your peer?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. What social interactions were demonstrated this week? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

6. What was positive about the lesson this week? \_\_\_\_\_

\_\_\_\_\_

7. What can be done differently for next week?

\_\_\_\_\_  
\_\_\_\_\_

8. How can I assist you having a successful lesson?

\_\_\_\_\_  
\_\_\_\_\_

## Attachment C

### 4. Implementation Plan

- a. Identify a general education science teacher interested in this project. - September 15, 2010
- b. The general education teacher will select the general education middle school students to participate in the project. - September 30, 2010
- c. The general education students will meet the ESE students and determine good matches. - October 11, 2010
- d. The ESE teacher will model a science lesson. -October 15, 2010
- e. The general education students will be responsible for deciding on their science project, preparation, and signing up for their week to present. -October 29, 2010
- f. Data will be collected by ESE teacher and 2 paraprofessionals during the science project. (data form and digital pictures)-weekly -each Friday -November 2010 through January 2011.
- g. A written interview form will be completed by the general education students after each science lesson. Each Friday-November 2010 through January 2011

### 5. Anticipated Results

1. My students will demonstrate improvement in sequencing skills.
2. My students will complete their science projects.
3. Improved social skills, especially stabilized tolerance levels, of both general and special education students will be observable through this project.

Overall, peer teaching forms friendships; and peer teaching opportunities can occur in the general education class so that my ESE students gain greater inclusion learning opportunities with their peers.