



How Neuro-typical Kindergartners Learn from Each Other: A Baseline of Peer Learning

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Received: Mar 29, 2016; Accepted: July 20, 2017; Published: July 22, 2017

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Competing interests: The authors have declared that no competing interests exist.

Cite as: Mlawski EA, DeLuca D, Cahill TF, Pinto-Zipp G. How Neuro-typical Kindergartners Learn from Each Other: A Baseline of Peer Learning. J Commun Disorder Assist Technol. 2017; 1: 1-21.

ABSTRACT

School based speech-language pathologists (SLPs) help promote functional language and communication skills among children in and out of the classroom. With the Common Core State Standards (CCSS) requiring children to work with their peers for the purpose of learning, SLPs can be a resource to classroom teachers on how to best promote the skills needed when peers work with peers. The purpose of this article is to identify the baseline behaviors that neuro-typical children use when working with a peer while engaging with each other during a contrived learning activity and to provide practical implications for SLPs when collaborating with teachers to maximize peer-learning at school and at home.

Key Words: Peer-learning, Elementary schools, Children, Speech-language pathologist, Contrived learning activities

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INTRODUCTION

According to the American Speech-Language and Hearing Association (ASHA), speech-language pathologists (SLPs) play a direct and integral role in executing educational standards as delineated by the Common Core State Standards (CCSS) [1,2]. With the strong interplay of speaking and listening in both speech language pathology and learning in a classroom, the role of SLPs in schools has evolved. There is now an even closer interplay between classroom teachers and SLPs as both professions are charged with implementing and facilitating elements of speaking and listening in the classroom [1]. Moreover, the work of SLPs and teachers are inextricably tied together as the need to work collaboratively to improve performance and academic progress of typically developing and non-typically developing students grows. Peer learning (PL) is one of several techniques used by educators to facilitate elements of speaking and listening in the classroom, and is mandated by the CCSS [2]. Additionally, PL is considered as a strategy that is capable of enhancing learning as it occurs in a classroom [3]. With these points in mind, a small study was created with the purpose to understand the specific verbal and non-verbal behaviors that are used and contribute to peer learning (PL) in kindergarten aged children, the ways in which these behaviors are used, and how children interact with each other during a contrived PL task. .

BACKGROUND

To begin, understanding how children learn from each other at the onset of schooling is advantageous for clinicians, teachers and others who work with children. Starting at very early ages, child peers have been found to motivate, inspire or even guide peer learning without even knowing it [4] because learning at an early age is social in nature [5,6]. Topping and Ehly [3]. created a conceptual framework in which the behaviors and processes influence PL and explains relationships therein. A process is defined as the activity (i.e., modeling) and behavior (i.e., observation) is defined as the basic skill exhibited by the student to which the process occurs [4].

Baseline behaviors and processes that occur during successful PL should lead to further development of the skills necessary for efficacious PL among children as well as the development of the peer dyads by the teachers. As is still current and relevant today, SLPs working in schools have a shared responsibility with teachers to support the CCSS, as language development forms the basis of the English Language Arts (ELA) standards [1,2]. In fact, ASHA's Roles and Responsibilities in Schools Policy document [1] defines the expectations of SLPs to support and promote the CCSS learning in the classrooms as part of their expertise in language. Recall, PL is a component of the CCSS Speaking and Listening standard.

According to the most recent ASHA policy documents published and recently updated, SLPs in schools are tasked with helping to prevent and identify deficits related to language and literacy that impact student performance in the classroom. Considering that SLPs have expertise in language development, they can assist classroom teachers in identifying students who may be struggling during these interactions. Additionally, SLPs can help classroom teachers

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identify student-specific social communication needs based on what is observed. Then, the SLP can align the needs to CCSS, as well as help to create an optimal classroom environment that will meet the social language needs of all of the students [1].

Therefore, SLPs can be a resource for classroom teachers when identifying what is making the peer interactions successful or not successful. Further, SLPs also can help classroom teachers identify key vocabulary terms and modify instructions that will help the peer interactions as warranted. SLPs can conduct model lessons or contrived activities for teachers to emulate [1].

PEER LEARNING

Peer learning (PL) is a social phenomenon that has the ability to exert influence on peer interactions [4]. Peer interactions, for example, peers working with peers, have been found to influence children's attitudes, beliefs and behaviors that can be important for their further development [7-9]. Accordingly, peer learning is based on the premise of additional opportunity to practice a new concept that aids in the learning process [10].

Peer learning plays a vital role in child development. For example, peer learning provides the ability for students to work together, contribute to each other's learning as catalysts for their own growth and development, as well as provides the opportunity for children to influence and motivate their peers [7-9,11,12]. Additionally, learning from peers capitalizes on how peers have ways to enhance natural and student centered learning (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003). Peer interactions provide numerous opportunities for learning and teaching as children work through a variety of interactions over the course of the school day [13]. Furthermore, peer learning develops students' inherent abilities to reinforce learning and provides opportunities for additional practice [14]. If executed effectively, PL will allow children to have more practice on newly learned skills without having to wait their turn for the teacher [11]. By controlling the environment in the classroom by using a contrived activity (an activity that is clinician centered and created for the child [15] the process of peer learning becomes the main focus of understanding for both the professionals working with the students as well as the students themselves.

Forms of Peer Learning in the Classroom

Understanding how the youngest children learn from each other at the onset of schooling is advantageous for clinicians, teachers and others who work with this population, because it sets the stage for early peer learning in the classroom. However, there is not one approach or method to peer learning.

Peer learning can assume four different shapes and forms in a classroom: Peer tutoring, peer monitoring, peer modeling, and peer education/incidental teaching. In order to understand how peer learning is enhanced by a contrived activity as conducted in this study, it is important to understand these four processes that can occur in in a classroom setting.

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One approach to peer learning is peer tutoring. Peer tutoring allows peers to supervise peers' responses. When peers participate in supervising their peers' responses, each student benefits from the reinforcement of the interaction. For example, in peer to peer interactions, each student has the opportunity to correct incorrect responses, as well as have increased opportunity to respond [3,4,16]. Since PL is occurring early in students' growth and development within their educational journey, students need to be guided through this process and need the help of professionals such as teachers or SLPs to work through a contrived activity. For example, Fuchs and Fuchs [10] devised an organizational strategy called Peer Assisted Learning Strategies (PALS) to promote decoding instruction for reading and facilitating practice amongst kindergarten aged students. In Fuchs and Fuchs [10] study on the PALS strategy, two groups of children were compared: one a control group who were not exposed to PALS and one experimental group who were exposed to the PALS strategy of PL. In the experimental group, the children worked in dyads using a contrived task taking turns as both the tutor and the tutee. First, the teachers trained the students in how to interact with each other. Students were trained to ask specific questions and provide specific corrective feedback as necessary. At the conclusion of the study, when students learned the routine, they were responsible for the implementation of the dyadic interaction and were found to make gains over the control group who did not use the PALS method. What is unknown is whether a prescriptive program such as PALS is transferable to areas outside of reading instruction and whether or not PALS prepares students to collaborate with a peer outside of the structured reading program. Thus, in a public school environment, teachers use contrived learning activities as a regular means by which to reinforce lessons and children are placed into peer groups to reinforce the learning intended.

The second form of PL in a classroom is a peer monitoring method that requires peers to observe and check if their peer partner is following the procedures or processes during a learning activity [3,17]. This method has been found to be effective with students as young as first grade [3], but does not discuss what baseline behaviors or processes for learning contribute to the monitoring success. Essentially, simply, the peer is merely assessing whether their peer partner is or is not following the procedures or processes during a learning activity.

A third, related process to peer monitoring is peer modeling. In peer modeling, peers provide examples of a desirable learning behavior with the intention of the behavior being imitated [11]. However, peer modeling varies from peer monitoring in that in peer modeling, teaching occurs through imitating a contrived activity to learn a particular skill or behavior. This is unlike peer monitoring, where learning is important however, how the student learns becomes the focus, not that they learned through imitating their peer. In peer monitoring, the goal is achieved when peers follow the instructions or processes shown to them. Therefore, peer monitoring does not necessarily involve or require a contrived activity. Conversely, peer modeling requires the use of contrived activities so that it becomes possible to easily assess success by imitation. By using this method of peer modeling, the baseline behaviors associated with PL can be elucidated.

Fourth, similar to peer modeling is peer education/incidental teaching. In peer education/incidental teaching,

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peers teach peers a contrived skill that they may not have, but need while [18]. For example, McGee et al. [18] utilized five-minute sessions between a targeted child who had the desired skill and the peer who needed the skill. Interactions were kept brief, which may have a positive effect on the attention of preschool children who would otherwise not pay attention for longer periods of time [19]. As McGee et al. [8] found, the children's interactions that resulted from the activity consisted of an initiation and a response that increased following peer training. This led to the conclusion that social interactions can benefit from peer to peer training [18]. This is important because it supports the idea in the literature that PL is social [4]. So, among the four forms of PL, the ages of the children, the styles of PL, and the level of the professionals' involvement with the peer dyad all affect the ability to elucidate the process of PL that is occurring. What was not identified was the baseline PL behaviors that contribute to successful PL interactions in the classroom.

Importance of PL in the Classroom

A fundamental benefit of PL is the provision of additional and quicker feedback that comes from working with a peer instead of waiting for the classroom teacher to make their way around a classroom [4]. According to Topping and Ehly [11], PL is also a vehicle for positive contact between students to evolve and while incidentally teaching social skills. Relevant and transferable skills are used that can be beneficial across different academic areas such as increased knowledge, skill, confidence, and motivation. Furthermore, Topping and Ehly acknowledge that the skills gained from PL can be used by both the students providing the support as well as by the students who are receiving support. This may apply to students within the classroom and may extend beyond the classroom experience [11].

Determining what students are doing during PL and the behaviors they are using may lead to understanding ways that this strategy can be enhanced in school during class time and/or during related services such as speech and language therapy. Understanding what baseline PL behaviors children use during PL interactions can help to identify which behaviors non-typically developing children are missing. Understanding how neuro-typically developing children process the information necessary to work with a peer can provide needed insight and aid when developing strategies to assist non-typically developing students in the classroom. These strategies can be utilized by SLPs working in collaboration with classroom teachers on contrived tasks or group projects or even during therapy activities inside or outside of the classroom. One point of recognition is that understanding PL is important, but to truly understand what is happening in a classroom environment where PL is occurring, the one constant that needs to be present is a contrived activity against which the interaction among neuro-typically developing students engaging in the PL contrived activity can be judged [20]. In that way, the classroom teacher or SLP can judge whether or not neuro-typically developing children are interacting as expected based on the behaviors observed during the contrived activity PL encounter. This is possible due to the structure present in the contrived learning activity shared among the peers.

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Theoretical Discussion

Interestingly, current literature cited herein on PL seems to be reliant on a prevalent but older theory, Bandura's Social Learning Theory [21], that is often used to explain the education of adults and children. Bandura's Theory explains a child's learning as predicated on four tenets: attention, retention, reproduction, and motivation. Attention is defined as the learner focusing on the information that needs to be learned or paying attention to the task at hand. Retention is the ability of the learner to link what they are learning to information that has previously been learned. Reproduction is the process of the learner rehearsing and reinforcing the information that they are learning. Another word for reproduction is imitation. And finally, motivation is the innate sense of wanting to learn from themselves or from others.

However, PL also involves a social interaction as it is the engages children during the learning process. The Theory of Social Constructivism by Vygotsky [22] can explain the role social interaction plays in learning. When the goal of learning is working together through cooperation, three distinct groups are brought together: the student, class member that will be the partner, and the teacher. For a successful PL experience, the teacher and both members of the peer dyad need to bring together their knowledge, attitudes, and prior experiences. The sharing of their knowledge, attitudes, and prior experiences needs to occur without each individual's attitude becoming a stumbling block to the learning experience (see Figure 1).

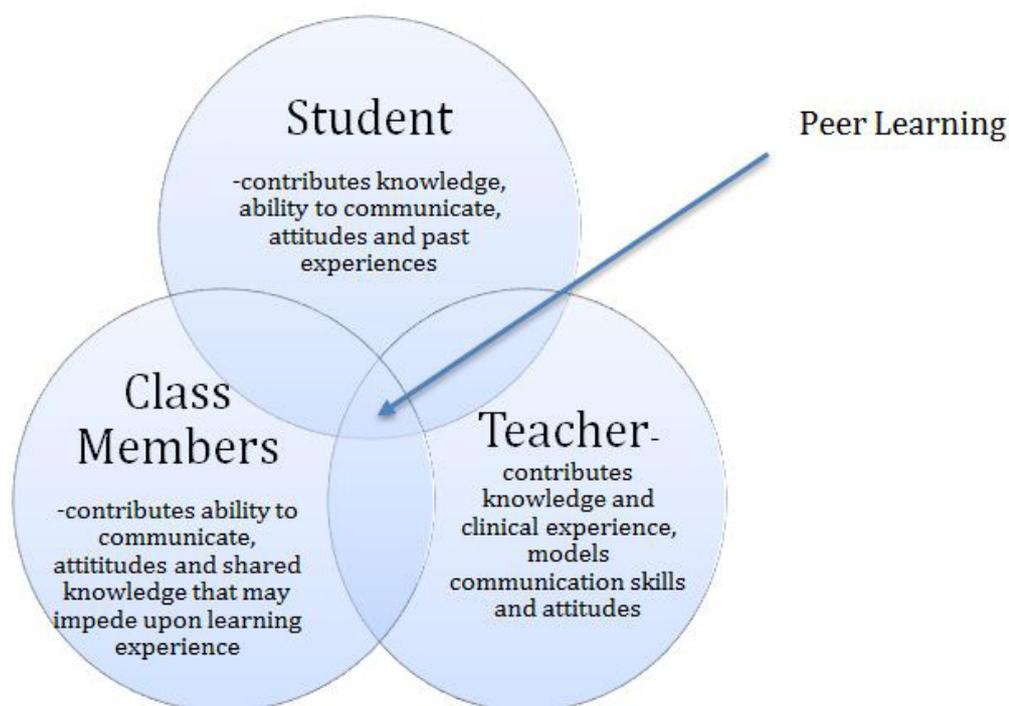


Figure 1: Constructivist Knowledge Sharing for Peer Learning

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Figure 1 illustrates the dynamic that occurs when the student, class members, and teacher interact and share information. When PL happens successfully, everyone has the opportunity to learn new information by extending their knowledge base and learning to work through their own attitudes. Poor communication, which is often a barrier to an efficacious learning interaction, should now be recognized as what makes a dyadic interaction successful.

PL as a Contrived Activity

Looking back at learning at its earliest point in childhood development being natural, social and play based, peer learning stems from these same basic constructs but progresses to a more structured advanced form of learning such as a contrived activity as the child matures. Based on the continuum of naturalness, a contrived activity would be one that is clinician centered and created for the child [15]. Such contrived activities may range from simple play with a toy or game to a more sophisticated classroom based learning activity. In relation to peer learning in a classroom, most activities are developed by the teacher. In order for the students to learn a concept effectively, the student must engage in the peer to peer learning process and that process must be assessed by the teachers or SLPs to determine if learning has occurred. This applies to almost any age student from kindergarten through high school.

There is a paucity of information on peer support during contrived activities in the classroom. However, it is assumed, knowing that part of the benefit of peer learning is peers learning from one another's models and/or expertise, that peers can support each other during contrived activities. During both general PL experiences and during contrived activities, students support one another by affecting their peers and by being affected by what is occurring [8]. For example, through the provision of the peers teaching each other a particular skill, modeling for each other and providing more time to practice learned skills, students are supporting the learning process. Regardless of the type of activity, the same type of PL interactions should be observed.

Problem Statement

The challenge for clinicians and teachers is to identify and understand the behaviors and processes that underlie successful learning early on to create a baseline of PL. Identification of the behaviors can then be applied successfully to the later stages of development or classroom learning. Moreover, the CCSS requires students to achieve specific standards in speaking and listening beginning in kindergarten related to PL [2]. The challenge facing SLPs is how to integrate their knowledge of speaking and listening as required by the CCSS into the classroom setting during early (e.g. kindergarten) levels of peer to peer learning when PL is beginning to evolve and promoting its development appropriately.

The CCSS for the development of speaking and listening skills presents an additional challenge for both SLPs and teachers [2]. According to the literature, peer to peer learning occurs early in a child's development, and there is an expectation that children will work together, appropriately supported by SLPs and teachers in the classroom. Little is still understood about these dyadic, peer-to-peer interactions from a learning perspective.

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Although the behaviors found for older children and adults to promote learning have been identified, there does not seem to be a translation from what is learned about the older population to kindergarteners in order to understand the baseline behaviors that kindergarten children are using or are the most successful with [3,4]. Current theories purport what children are doing when working together, but there are no studies of what baseline behaviors kindergarten children are actually using during dyadic PL [3,13].

Creating a baseline of the behaviors and social communication needs occurring throughout PL has overarching implications for future classroom success. The CCSS mandates speaking and listening expectations for learning that includes using peers to acquire and learn new knowledge [2]. Teachers and SLPs understand what is necessary to make PL possible and how to have children meet the standard. What needs to occur is for teachers and SLPs to work collaboratively to recognize how neuro-typically developing children meet the CCSS standards in order to recognize the needs of non-typically developing students. This knowledge could [[provide the foundation for PL as it continues to spiral to the twelfth grade [23]. By identifying and understanding the social communication that underlies PL at the early stage of kindergarten as mandated by the CCSS, not only should meaningful and mandated learning occur, but collaboration between responsive educators (the SLP and the classroom teacher) who are working together to achieve the mandated CCSS goals should also be occurring.

METHODS

Research Design

A descriptive/explorative, serial case study design was utilized to understand a dyadic interaction between kindergartners. This design allowed the primary investigator (PI) to observe performance of a learning task in order to identify what baseline behaviors the children utilized during PL. The qualitative design of this study allowed for the natural observation of the dyadic interaction of the children in the actual setting where PL occurs as they pursued their assigned learning task.

Participants

Participants were recruited from one community in Central New Jersey. The sample included twelve children ranging in age from 5 years, 10 months to 6 years, 5 months old; nine of whom were male and three were females. The participants were from two different classrooms in the same school building and had just begun a summer school program. At the time this study was conducted, the students were unfamiliar with each other. Testing was conducted during the first week of the program.

The school district superintendent provided permission to collect data. This district serves children from pre-kindergarten through the twelfth grade. The school is comprised of a variety of ethnic groups with children of Hispanic decent making up the majority of the students. During the 2013-2014 school year, 78.6% of the 715 students

enrolled were classified as economically disadvantaged. Institutional Review Board (IRB) approvals were sought and received as needed.

After obtaining IRB approvals, sixty-nine packets were distributed to four different kindergarten classrooms. A solicitation letter, informed consent letter and a short demographics survey for introductory information was provided to students' parents requesting their child's permission to participate. As the participants in the study were minor children, assent from each of the participating children was acquired following receipt of the parents' consent.

Thirty-two participant packets were returned and found viable to begin eligibility testing. Once the PI verified the completeness of the packets, identification numbers were assigned to the information returned in the packets in order to protect the participants' confidentiality.

Inclusion Criteria

The following inclusion criteria were utilized: Only neuro-typically developing children as determined from the parent's completion of the demographic survey; students' ages needed to be from 5;0 to 6;6 years old; English as the primary language; Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4) within normal limits [24], fine and gross motor ability as measured by the Peabody Developmental Motor Scales [25] needed to be within normal limits; and the participating children had to be enrolled in school for at least six months in order to have an understanding of a teaching environment.

Procedures

Following assent, the thirty-two eligible children were assessed individually by the PI to ensure the children were of similar ability for both English proficiency and vocabulary using the PPVT-4 and baseline developmental motor abilities using the Peabody Developmental Motor Scales, Second Edition (PDMS-2) prior to beginning the study. The PDMS-2 measures both fine and gross motor development.

Following testing using the PPVT-4, the scores from the twelve children who met the inclusion criteria were used to create the dyads. The dyads were created by first ranking the PPVT-4 scores from highest to lowest scores (see Table 1). For dyads 1, 2, and 3, the higher PPVT-4 scorers began as the leaders and for dyads 4, 5, and 6, the lower PPVT-4 scorers were established as the leader first (see Figure 2).

This counter balanced the dyads in order to determine if a child's vocabulary knowledge affected leading during the learning activity. Due to the sample being of relative convenience, dyads one through five were paired as intended. One dyad, did not share the paired ranking due to a student calling in absent requiring the participant to be replaced and PPVT-4 score did not align neatly within the other rankings.

Dyad #	1	2	3	4	5	6
Student Participant Numbers	13 & 8	2 & 7	3 & 11	9 & 10	16 & 1	5 & 12
Corresponding PPVT-4 Scores	129 119	108 106	103 103	103 103	94 93	87 106

Table 1: Organization of Dyads

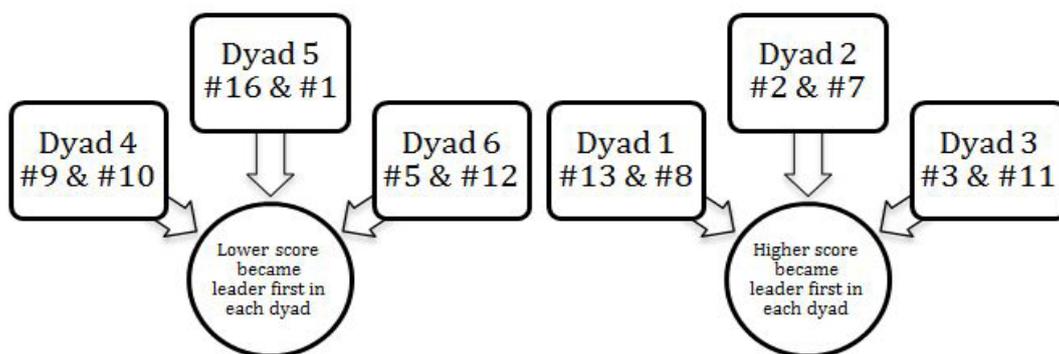


Figure 2: Dyads and Leaders

The Contrived Activity for Peer Learning

The study began with the first dyad being introduced to the contrived activity, a beanbag game that was created by the PI for the purposes of this study (i.e., “Let’s play a beanbag game”). The game included eight beanbags and a board with a hole in the middle that was set up on the floor in which to toss the beanbag. The game was taught to each dyad the day after testing was completed and dyads were assigned. Although the game may seem familiar, it was not played traditionally; this was done to ensure that each dyad was learning the contrived activity at the same time. Beanbag tossing was chosen as it is an activity commonly used with kindergarten students [26] However, in this study, the game was changed slightly. The study will begin with child 1 and 2 being introduced to the game (i.e., Let’s play a bean bag game). The game will include two bean bags (one for each child) and a board that will be on the floor with a target and a hole in the middle for the children to try to get the bean bag into. The children will be assigned roles (tutor/leader role and tutee/follower role) that has been found in the literature as the predominant form of peer learning during dyadic interactions [10,12]. At the conclusion of the first game, the PI also told the students that they would be switching roles half way through so everyone had equal turns as leader and learner.

Directions were provided to the dyads as followed: “The object of the game is to get the bean bag into the hole. The leader will begin by deciding how to throw the bean bag into the hole and then will have to teach the other player

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how to throw the bean bag exactly like them. Each time the bean bag is tossed, how the bean bag is tossed should be different from the toss before. The first person to get the bean bag into the hole five times wins. Then the other person will be the leader of the same game. I'll be right here watching and keeping score".

The game board was placed five feet away (as measured by a tape measure by the PI) from a 24 inch round mat where each child stood when it was his/her turn to toss the beanbag, as based on distances established by Johnson [27]. This made the game achievable and fun for the kindergarteners. The purpose of this contrived beanbag toss was not about getting the beanbag in the hole. Rather, it was about observing the baseline behaviors for PL that each dyad engaged in while working together to accomplish each successful toss.

At the beginning of each dyadic interaction, children were verbally assigned by the PI to the role of leader and learner (See Figure 2). The leader was the student who initiated the activity and the learner was the peer partner. Assigning roles has been found in the literature to be the predominant form of PL during dyadic interactions [10,12]. Once the game began, each dyad played their game, tossing and collecting the beanbags until time was up. No other dyads were present. The interaction continued for ten minutes as this amount of time was used in previous PL dyads for kindergarten aged children [10,28]. The only expectation of the dyad was for the leader and learner to participate in the rules of the game as they were taught to play.

All interactions were video recorded using a Sony Bloggie Camera set up on a tripod by the PI. The children were aware of the camera, but it did not appear to affect the interactions.

Data Analysis

The PI collected, transcribed, and analyzed data through observation and video-recording of peer dyadic interactions to determine what verbal and non-verbal behaviors occurred that can be defined as PL. Then, the PI coded and explored transcripts in order to describe the experience of PL in these children's dyads based on guidance by Topping and Ehly [3]. Additionally, the PI created an a priori list of codes from the literature (expansion, recasting, commenting, following the child's lead and using more referential language), all of which have been commonly used during peer interactions [3,29,30]. This is an inductive approach to coding since the codes assigned were based on the data emerging rather than on preconceived themes and categories. Additionally, remember that qualitative data is unique in that there is no uniformly derived means by which to assign those codes.

In order to lend an additional level of validity to the coding process, a peer reviewer was added. As explained by Merriam [31], qualitative expert, the process of peer examination or peer review increases trustworthiness and internal validity of the data. The peer reviewer's role was to review the codes developed to ensure they accurately reflect the text. Upon completion of the review, feedback and discussion occurring regarding the true meaning of the themes emerging and changes if needed were made to the coding. Five predominant themes emerged from this coding and peer review process.

Also, the PI established a new code to identify an emergent, unanticipated behavior related to the learning process during the peer interactions [3]. Here, this unanticipated behavior was identified as the leader looking to the PI for clarification instead of to their peer. Although this particular action may not seem “unanticipated”, recall that this is supposed to be a natural learning experience mimicking what goes on in a typical kindergarten classroom. Furthermore, the data concerning the children’s reactions during these interactions was coded and analyzed to determine if children in the same age range react in similar ways during PL in the context of an immediate learning task (i.e., teacher role and/or student role).

The PI transcribed data for themes/behaviors following an inductive approach as the data was collected, coded, and analyzed simultaneously [32]. An inductive process facilitates identification of relevant variables (i.e., behaviors) while the identifying theoretical concepts were grounded in what the PI observed from the peer dyads. The PI reviewed the videos to determine what verbal and non-verbal behaviors occurred during dyadic interactions that revealed PL. The PI sought to determine if observations during the peer dyad interaction could be explained by the behaviors identified by Topping and Ehly [3].

Reliability

The PI took actions to support trustworthiness of the data and findings. First, assessment of the accuracy of the findings was built upon the trust gained by the PI with the participants [32]. The students came from two different classrooms. Each students’ classroom teacher introduced the PI to their class prior to the initial packets being sent home. Then, the PI was re-introduced to the participants prior to talking to them about assenting to the research study. The two teachers were always within eyesight to promote comfort and the students were reminded to ask any questions that they had. The establishment of credibility and dependability occurred through audits of the coding and conclusions by the PI’s dissertation committee [32]. Additionally, transferability was attained through a thick description of the PL exchanges that can be considered when reviewing transcripts to determine if the finds have applicability in other contexts [32].

Learning Behaviors

To understand how the behaviors for learning codes were identified, examples of participants’ actions (non-verbal communications) and verbalizations are provided in Table 2. In reviewing the tables, note that the results reported capture the following: when interactions occurred as anticipated from the literature, it occurred just as prescribed. When the interactions did not occur as anticipated, they just didn’t occur at all.

RESULTS

Two learning behaviors were observed being used by the kindergarten children. The first learning behavior was peer observation (see Table 3). Peer observation occurred when one child turned and watched their peer during

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the learning activity. For example, in dyad two, after picking up all of the beanbags, participant seven returned to where the participants stood and participant two looked over at seven and then stood next to participant seven using the same posture. Another example is dyad three, where participant three was seen looking over at participant eleven before making his or her toss. At this early age in learning, peer observation is clearly a modeling activity; what they see is what they repeat, not unlike a teacher interacting effectively in the classroom eliciting appropriate responses.

Behaviors Observed	Definitions
Modeling (verbal or non-verbal)	Behavioral, cognitive or affective changes that result from watching another person
Imitation	Following the lead of the another participant
Prompting (verbal or non-verbal)	Indicating to another to participate in the activity
Self-reinforcement	Cheering for themselves during the activity
Feedback (positive or negative)	Providing either positive or negative comments regarding the toss that was made

Table 2: Definition of Behaviors Associated with Observation

Behaviors Observed	Total Usage by all Dyads	Dyad With Most Usage
Modeling (non-verbal)	1	Dyad 4
Modeling (verbal)	4	Dyad 1
Imitation	7	Dyad 6
Prompting (non-verbal)	14	Dyad 4
Prompting (verbal)	31	Dyad 3

Table 3: Number of Times Each Dyad Used the Behaviors Associated with Observation

The behavior that was observed the most was prompting, but even more specifically, verbal prompting, which was used to keep the game moving and to keep the student whose turn it was focused on the task at hand. For example, verbal prompting occurred in dyad three when participant eleven looked over at participant three and provided verbal prompting and non-verbal prompting when providing an arm gesture while stating, "Toss it this way." Another example of verbal prompting occurred in dyad four when participant ten got participant nine's attention when stating, "Okay. You're just going to throw like this, okay?" Similarly, during dyad five, participant sixteen provided verbal prompting to get participant one's attention by saying, "Okay (1), it's time."

The second most frequent peer observation behavior that was noticed was non-verbal prompting. Participant ten in

dyad four revealed this when the following actions were noticed: first, participant ten made eye contact with participant nine. Then, participant ten showed participant nine how to hold the beanbag prior to tossing it by stretching out their hand with the beanbag in it for participant nine to follow. Another example of non-verbal prompting occurred in dyad five when the following was noticed: participant sixteen walked over to participant one, hooked an arm around participant one's arm and then guided participant one back to the starting point.

Therefore, where the behavior of peer observation is concerned, both verbal and non-verbal behaviors are used interchangeably to accomplish the desired goal among the interacting kindergartners.

The **second learning behavior** was *peer feedback* with the behaviors found to be associated with feedback (see Table 4). Peer feedback was observed when one participant turned to their peer and either said something positive or negative to the other member of the dyad. An example of positive peer feedback was seen in dyad four, when participant ten tapped participant nine on the arm after the toss and said, "Good job." Similarly, an example of negative feedback was exhibited by dyad five when participant sixteen turned to participant one and said, "No, you're a cheater." Therefore, it may be possible to state that peer feedback is a behavior closely related to peer observation during early learning. This is because the feedback behavior requires clear observation of the other member of the dyad to elicit an age-appropriate response for the activity being undertaken, whether positive or negative.

Behaviors Observed	Total Usage by all Dyads	Dyad With Most Usage
Self-reinforcement- encouraging oneself	63	Dyad 3
Feedback (positive)- encouraging advisement to peer	6	Dyad 3
Feedback (negative)- discouraging advisement to peer	9	Dyad 5

Table 4: Number of Times Each Dyad Used the Behavior under Feedback

Feedback was characterized as providing either positive or negative comments regarding the toss that was made. An example of *self-reinforcement* was the student cheering for him/herself during the activity. Out of all the behaviors used during the dyadic interactions, self-reinforcement was observed the most. In dyad one, an example of self-reinforcement was heard when participant thirteen stated, "Oh, that was so good," after tossing the beanbag toward the target, while looking straight ahead and not interacting with his peer.

In another example of self-reinforcement occurred in dyad two where participant seven is heard saying, "Yes!" after the beanbag fell into the hole on the board again while looking straight ahead at the target. Similar to dyad two, in dyad three, participant eleven was observed multiple times saying, "Yes!" after the beanbag fell into the hole and even pumped an arm in excitement while no recognition to his peer was observed. Likewise, in dyad five,

participants one and sixteen were heard stating “yes” after tossing the beanbag, even if the beanbag did not fall into the hole. Therefore, self-reinforcement was predominant in the learning activity.

What was rarely observed was one participant positively reinforcing another. In a rare occurrence as seen in dyad three, participant eleven was observed to say, “Oh, nice one,” to participant three after three tossed the beanbag into the hole. Similarly, another positive reinforcement occurred in dyad four, when participant ten tapped participant nine on the arm and said, “Good job.” Interestingly, dyad one, which had the highest verbal score on the PPVT-4, used limited behaviors to teach or model for each other, yet used verbal prompting more than non-verbal prompting when they interacted. Dyad two used more behaviors overall than dyad one, but also used limited behaviors to teach each other. Dyad three only used prompting when interacting with each other. Dyad four used prompting the most, but even more specifically, used verbal prompting. Similar to dyads two and three, dyad five used only prompting and similar to dyad four, used verbal prompting more than non-verbal prompting. Overall, what was seen during the dyads was that students were not openly modeling for each other or looking over at each other in order to imitate what each other was doing. This is an unusual observation in these kindergarten aged dyads because, at this age, kindergartens should demonstrate more cooperative interactions [33]. The students were observed looking forward and tossing the beanbag in whatever way they felt comfortable, and even if encouraging each other verbally, were not interacting with or acknowledging one another during the exchange.

DISCUSSION

Connections between Baseline PL Behaviors and Dyadic Interactions

This study was exciting because the findings answer the problem statement posed: baseline behaviors associated with PL activities among kindergarteners were observed and identified in a way never documented in recent literature. In this study, it became possible to acknowledge a possible association between peer observation and peer feedback, which may suggest that in a responsive classroom environment, learning at an early age can be achieved quickly by mastering learning behaviors naturally present in the child and working with them. Recall, for the SLP, observing whether or not the child is responding appropriately to a contrived activity through modeling, prompting (verbally and non-verbally), imitating, and providing feedback would be an example of the application of the knowledge gained from this study. Similarly for the teacher, being more attuned to nuances in a child’s behavior toward learning and interacting will strengthen the student-teacher academic bond.

Recall that peer observation and peer feedback were two learning behaviors described by Parr and Townsend [4]. Interestingly, a third learning behavior, social comparison, that Parr and Townsend associated with PL was not in this study. Social comparison is defined as the students finding similarity or differences between each other [4]. This may be because this study was cross-sectional and the children did not have sufficient opportunities to learn about how each other feels about school and their values. As stated earlier, the participants were from two different

classrooms in the same school building and had just begun a summer school program and were unfamiliar with each other.

Peer Learning is Social

It is important to understand that language and learning is social in nature as discussed earlier. Many of the standards associated with CCSS address speaking and listening, both of which are social skills. Children need to understand and use the skills associated with a social interaction approach to language development because language grows during social interactions [6]. Teachers and SLPs need to identify any missing socially interactive behaviors such as modeling, prompting (verbal and non-verbal), imitating, and providing feedback. Because of their understanding of how knowledge develops, they can push the students appropriately under the guise of the CCSS to achieve goals in typically-developing and non-typically developing children based on PL processes observed.

Unexpected Observations

In addition, there were two unexpected observations. First, was the type of play that was observed during the dyads. Following data collection and analysis, the type of play predominantly observed was parallel play. This type of play is common between the ages of one to three years old and is characterized by children playing in each other's company, but without actual interaction [33]. What makes this finding interesting is that kindergarten aged children should be participating in cooperative play, where children work together to play a game or complete an activity [33]. Another unexpected observation occurred when a student looked toward the PI to ask for clarification instead of toward their peer to answer their question. For example, in dyad one, participant eight turned to the PI and asked irritatedly, "So like I have to do it the same as he did?" Another example of asking the PI for clarification also occurred in dyad one when participant thirteen asked, "So we have to do what we did before?"

Theoretical Discussion

In this study, Bandura's tenets [21] and Vygotsky's Social Constructivism (1978) was observed among the participants during the dyadic interactions. Participants needed to pay attention to their peer in order for the contrived interaction to go as planned. When one peer was not paying attention to the other, children were observed prompting each other either verbally, non-verbally or physically. Aspects of retention were observed when the follower repeated the action of the peer leader such as saying "yes!" or pumping an arm in the air after a successful toss. Features of reproduction are integral to PL as working with a peer can produce additional practice of a learned skill that may not occur if a student needs to wait for their teacher to go around a classroom to practice with all of their students. Moreover, motivation to learn is foundational to any learning experience. All of these were evidenced as part of the cooperative, social interactions.

Integrating the findings of this study with Bandura's four tenets of Social Learning Theory [21], what distinguished dyad 1 from the other dyads were their higher linguistic skills, higher PPVT scores, the asking questions, and

providing encouragement between peers. Therefore, one might infer that observation is a learning behavior that the child uses before any formal instruction ever occurs. And, observation can be linked to Bandura's [21] tenet of attention being an integral component to learning.

The above-described observations of peers learning from peers are important factors in determining how children work cooperatively together. Listening and speaking skills are vital during peer-to-peer interactions as defined by the CCSS. However, further research is needed to determine if an affective connection plays a role in PL.

Implications

There are various benefits to peers learning from peers. First, learning from peers provides the opportunity for children to influence and motivate the other students in their class [7- 9]. Additionally, learning from peers capitalizes on how peers have the ability to enhance natural and student centered learning [13]. Also, PL provides numerous opportunities for learning and teaching as children work through a variety of interactions over the course of a school day [13]. Since PL is ultimately a social learning experience and social language falls within the purview of SLPs, classroom teachers and SLPs can work collaboratively to develop plans for teaching the social language and metacognitive strategies needed for successful peer interactions [1]. What is often overlooked is that PL utilizes the students themselves as a tool for learning and an opportunity for additional practice [14]. If executed effectively, PL will allow children to have more practice on newly learned skills.

As identified previously, PL can be an invaluable resource. SLPs, teachers and parents are essential role models for children to learn effective participation in these interactions. Table 5 lists recommendations for SLPs and teachers derived from observations of behaviors as recorded in this study along with support from current literature. When everyone who has influence over children recognizes their role in the PL process, it will only strengthen the learning strategy that is being used in many classrooms. Moreover, by first implicitly teaching the skills associated with self-regulated learning, then peer learning can be supported between dyads.

Recommendations for SLPs
<ul style="list-style-type: none"> • Should understand age related standards in the CCSS relating to an SLP's knowledge of the role of speaking and listening in the classroom • Should engage students on how to work with peers in areas such as modeling, prompting (verbally and non-verbally), imitating and providing feedback • Should identify deficits when children are not successfully working together • Should collaborate with classroom teachers • Should assist classroom teachers in the identification of key vocabulary terms that will help the peer interactions • Should conduct model lessons or contrived activities for teachers to emulate • Should provide guidance to teachers as needed regarding peer learning strategies that can be utilized in the classroom along with contrived activities • Should modify instructions as warranted • Should communicate with parents the skills learned in school (classroom and social learning) as parents are partners in the learning process and can reinforce lessons learned at home
Recommendations for Teachers
<ul style="list-style-type: none"> • Should understand age related standards in the CCSS relating to a teacher's knowledge of the role of speaking and listening in the classroom • Should model how to prompt (verbally and non-verbally), develop skills for imitating and how to provide feedback to teach and reinforce learning • Should engage students on how to work with peers as necessitated by the CCSS • Should collaborate with SLPs to understand how language is the basis of speaking and listening • Should provide guidance to SLPs as needed regarding peer learning strategies that can be utilized in the classroom along with contrived activities • Should work collaboratively with SLPs to develop plans for teaching the social language and metacognitive strategies needed for successful peer interactions • Should help SLPs identify key vocabulary terms that will help the peer interactions and the modification of instructions as warranted • Should being more attuned to nuances in a child's behavior toward learning and interacting will strengthen the student-teacher academic bond • Should communicate with parents the skills learned in the classroom as parents are partners in the learning process and can reinforce lessons learned at home

Table 5: Summary of Recommendations for SLPs and Teachers to Promote Peer Learning

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