

## Peer-Mediated Instruction and Intervention (PMII)

### Brief Introduction

Over the years, social skills training has been emphasized in the school setting for helping students with autism (AU). Many of these students learn their interactional skills through adult direction. As a way to improve social reciprocity in more natural social contexts, peer-mediated interventions are used to provide social learning opportunities through peer interaction, peer modeling, and peer reinforcement.

### Description

Peer-mediated instruction and interventions (PMII) emphasize the involvement of typically developing peers as socially competent facilitators to promote appropriate communicative and social behaviors. Peer-mediated interventions encompass various teaching strategies. DiSalvo and Oswald (2002) have organized peer-mediated interventions into three approaches according to peer expectancies to promote interaction: (a) manipulation of the situation or contingencies, (b) peer instruction in social interaction strategies, and (c) instruction of the target child in initiation strategies. The first approach encourages students with autism to interact with peers by creating learning and modeling opportunities. The second aims at teaching the typically developing peer specific social skill strategies to enhance social interaction with students with autism. Finally, the third approach increases peer effectiveness by teaching students with autism initiation skills. Peer-mediated interventions usually take place in the classroom or in the community. The child's natural social environment is most preferable. In addition, it is important to establish peers' positive attitude toward the student with autism and to create a supportive environment for social interaction.

PMII meets evidence-based criteria with 15 single-case design studies. According to the evidence-based studies, this intervention has been effective for preschoolers (3–5 years) to high school-age learners (15–18 years) with ASD. PMII can be used effectively to address social, communication, joint attention, play, school readiness, and academic skills.

### Brief adapted from

Fettig, A. (2013). *Peer-mediated instruction and intervention (PMII) fact sheet*. Chapel Hill, NC: The University of North Carolina, Frank Porter Graham Child Development Institute, The National Professional Development Center on Autism Spectrum Disorders.

Neitzel, J. (2008). *Overview of peer-mediated instruction and intervention for children and youth with autism spectrum disorders*. Chapel Hill, NC: The University of North Carolina, Frank Porter Graham Child Development Institute, The National Professional Development Center on Autism Spectrum Disorders.

## Matrix of PMII by Outcome and Age (years)

Social			Communication			Behavior			Joint Attention			Play			Cognitive			School Readiness			Academic			Motor			Adaptive			Vocational			Mental Health		
0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22			

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### Peer-Mediated Instruction and Intervention (PMII) Research Summary

Ages	Skills/Intervention Goals	Settings	Outcome
3-18 years	Social, communication, interpersonal, joint attention, play, school readiness, academic, adaptive	Home, school, community	EBP

\*The information found in the Research Summary table is updated yearly following a literature review of new research and this age range reflects information from this review.

#### Research

Blew, P. A., Schwartz, I. S., & Luce, S. C. (1985). Teaching functional community-based skills to autistic children using nonhandicapped peer tutors. *Journal of Applied Behavior Analysis, 18*(4), 337–342.

Carr, E. J. & Darcy, M. (1990). Setting generality of peer modeling in children with autism. *Journal of Autism and Developmental Disorders, 20*(1), 45–59. doi: 10.1007/BF02206856

Carter, E. W., Cushing, L. S., Clark, N. M., & Kennedy, C. H. (2005). Effects of peer support interventions on students' access to the general curriculum and social interactions. *Research and Practice for Persons with Severe Disabilities, 30*(1), 15–25. doi: 10.2511/rpsd.30.1.15

Garfinkle, A. N., & Schwartz, I. S. (2002). Peer imitation: Increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms. *Topics in Early Childhood Special Education, 22*(1), 26–38.

Garrison-Harrell, L., & Kamps, D. (1997). The effects of peer networks on social-communicative behaviors for students with autism. *Focus on Autism and Other Developmental Disabilities, 12*(4), 241–255.

Goldstein, H., Kaczmarek, L., Pennington, R., & Shafer, K. (1992). Peer-mediated intervention: Attending to, commenting on, and acknowledging the behavior of preschoolers with autism. *Journal of Applied Behavior Analysis, 25*(2), 289–305.

Haring, T. G., & Breen, C. G. (1992). A peer-mediated social network intervention to enhance the social integration of persons with moderate and severe disabilities. *Journal of Applied Behavior Analysis, 25*(2), 319–334.

Kamps, D. M., Barbetta, P. M., Leonard, B. R., & Delquadri, J. (1994). Classwide peer tutoring: An integration strategy to improve reading skills and promote peer interactions among students with autism and general education peers. *Journal of Applied Behavior Analysis, 27*(1), 49–61. doi: 10.1901/jaba.1994.27-49

Kamps, D. M., Potucek, J., Lopez, A. G., Kravits, T., & Kemmerer, K. (1997). The use of peer networks across multiple settings to improve social interaction for students with autism. *Journal of Behavioral Education, 7*(3), 335–357. doi: 10.1023/A:1022879607019

Kohler, F. W., Strain, P. S., Hoyson, M., Davis, L., Donina, W. M., & Rapp, N. (1995). Using a group-oriented contingency to increase social interactions between children with autism and their peers: A preliminary analysis of corollary supportive behavior. *Behavior Modification, 19*(1), 10–32.

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- Kohler, F. W., Strain, P. S., Maretsky, S., & DeCesare, L. (1990). Promoting positive and supportive interactions between preschoolers: An analysis of group-oriented contingencies. *Journal of Early Intervention, 14*(4), 327–341.
- Laushey, K. M., & Heflin, L. J. (2000). Enhancing social skills of kindergarten children with autism through the training of multiple peers as tutors. *Journal of Autism and Developmental Disorders, 30*(3), 183–193.
- Lee, S., & Odom, S. L. (1996). The relationship between stereotypic behavior and peer social interactions for children with severe disabilities. *The Journal of the Association for Persons with Severe Handicaps, 21*(2), 88–95. (Previously published in Korean.) doi: 10.1177/154079699602100204
- Lee, S., Odom, S. L., & Loftin, R. (2007). Social engagement with peers and stereotypic behavior of children with autism. *Journal of Positive Behavior Interventions, 9*(2), 67–79. doi: 10.1177/10983007070090020401
- Mundschenk, N. A., & Sasso, G. M. (1995). Assessing sufficient social exemplars for students with autism. *Behavioral Disorders, 21*(1), 62–78.
- Neitzel, J. (2008). *Steps for implementation: PMII for elementary, middle, and high school*. Chapel Hill, NC: The National Professional Development Center on Autism Spectrum Disorders, FPG Child Development Institute, UNC-Chapel Hill.
- Nelson, C., McDonnell, A. P., Johnston, S. S., Crompton, A., & Nelson, A. R. (2007). Keys to play: A strategy to increase the social interactions of young children with autism and their typically developing peers. *Education and Training in Developmental Disabilities, 42*(2), 165–181.
- Odom, S. L. (1991). Reducing teacher prompts in peer-mediated interventions for young children with autism. *The Journal of Special Education, 25*(1), 26–43. doi: 10.1177/002246699102500103
- Odom, S. L., & Strain, P. S. (1986). A comparison of peer-initiation and teacher-antecedent interventions for promoting reciprocal social interactions of autistic preschoolers. *Journal of Applied Behavior Analysis, 19*(1), 58–72.
- Owen-DeSchryver, J. S., Carr, E. G., Cale, S. I., & Blakeley-Smith, A. (2008). Promoting social interactions between students with autism spectrum disorders and their peers in inclusive school settings. *Focus on Autism and Other Developmental Disabilities, 23*(1), 15–28. doi: 10.1177/1088357608314370
- Petursdottir, A. L., McComas, J., McMaster, K., & Horner, K. (2007). The effects of scripted peer tutoring and programming common stimuli on social interactions of a student with autism spectrum disorder. *Journal of Applied Behavior Analysis, 40*(2), 353–357. doi: 10.1901/jaba.2007.160-05
- Sainato, D. M., Goldstein, H., & Strain, P. S. (1992). Effects of self-evaluation on preschool children's use of social interaction strategies with their classmates with autism. *Journal of Applied Behavior Analysis, 25*(1), 127–141.
- Sasso, G. M., Mundschenk, N. A., Melloy, K. J., & Casey, S. D. (1998). A comparison of the effects of organismic and setting variables on the social interaction behavior of children with developmental disabilities and autism. *Focus on Autism and Other Developmental Disabilities, 13*(1), 2–16.

## Peer-Mediated Instruction and Intervention (PMII)

- Thiemann, K. S., & Goldstein, H. (2004). Effects of peer training and written text cueing on social communication of school-age children with pervasive developmental disorder. *Journal of Speech, Language, and Hearing Research, 47*(1), 126–144.
- Trembath, D., Balandin, S., Togher, L., & Stancliffe, R. J. (2009). Peer-mediated teaching and augmentative and alternative communication for preschool-aged children with autism. *Journal of Intellectual and Developmental Disability, 34*(2), 173–186. doi: 10.1080/13668250902845210
- References**
- Bass, J. D., & Mulick, J. A. (2007). Social play skill enhancement of children with autism using peers and siblings as therapists. *Psychology in the Schools, 44*(7), 727–735.
- Carter, E. W., & Hughes, C. (2007). Social interaction interventions: Promoting socially supportive environments and teaching new skills. In S. L. Odom, R. Horner, M. Snell, & J. Blancher. (Eds.), *Handbook of developmental disabilities* (pp. 310–328). New York, NY: Guilford Press.
- Carter, E. W., & Kennedy, C. H. (2006). Promoting access to the general curriculum using peer support strategies. *Research and Practice for Persons with Severe Disabilities, 31*(4), 284–292.
- Dugan, E., Kamps, D., Leonard, B., Watkins, N., Rheinberger, A., & Stackhaus, J. (1995). Effects of cooperative learning groups during social studies for students with autism and fourth-grade peers. *Journal of Applied Behavior Analysis, 28*(2), 175–188.
- English, K., Goldstein, H., Shafer, K., & Kaczmarek, L. (1997). Promoting interactions among preschoolers with and without disabilities: Effects of a buddy skills-training program. *Exceptional Children, 63*(2), 229–243.
- Goldstein, H., Schneider, N., & Thiemann, K. (2007). Peer-mediated social communication intervention: When clinical expertise informs treatment development and evaluation. *Topics in Language Disorders, 27*(2), 182–199.
- Kamps, D. M., Leonard, B. R., Vernon, S., Dugan, E. P., Delquadri, J. C., Gershon, B., Wade, L., & Folk, L. (1992). Teaching social skills to students with autism to increase peer interactions in an integrated first-grade classroom. *Journal of Applied Behavior Analysis, 25*(2), 281–288.
- Kamps, D. M., Potucek, J., Lopez, A. G., Kravits, T., & Kemmerer, K. (1997). The use of peer networks across multiple settings to improve social interaction for students with autism. *Journal of Behavioral Education, 7*(3), 335–357.
- Maheady, L., Harper, G. F., & Mallette, B. (2001). Peer-mediated instruction and interventions and students with mild disabilities. *Remedial and Special Education, 22*(1), 4–14.
- McConnell, S. R. (2002). Interventions to facilitate social interaction for young children with autism: Review of available research and recommendations for educational intervention and research. *Journal of Autism and Developmental Disorders, 32*(5), 351–372.

## Peer-Mediated Instruction and Intervention (PMII) Steps for Early Childhood Implementation

### **Step 1. Selecting Peers**

The first step in implementing peer initiation training is to select the peer or peers who will be involved in the interactions with the focal child. Selected peers should:

- exhibit good social skills, language, and age-appropriate play skills;
- be well-liked by other peers;
- have a positive social interaction history with the focal child;
- be generally compliant with adult directives;
- be able to attend to an interesting task or activity for 10 minutes;
- be willing to participate; and
- attend school on a regular basis (Strain & Odom, 1986; Sasso et al., 1998).

### **Step 2. Training and Supporting Peers**

Peer training typically takes place in a quiet area of the classroom where all of the needed materials are organized and close at hand; it involves a series of phases. The first phase (Step 2a) of the training process is to teach the pre-selected peers to recognize and appreciate individual differences. For example, practitioners talk to peers about similarities and differences (e.g., how we are the same and different in appearance, likes/dislikes, needs, abilities) and explain how we often learn from each other in the classroom (e.g., games, songs, movements). During this initial phase, peers also are given a brief overview of the similarities and differences of children with ASD.

This discussion will vary in content based upon the ages of the peers. For instance, in preschool, the discussion will be very concrete and will focus on observable behaviors (e.g., “Taylor needs help learning how to play with other kids, so we are going to teach him how.”). For school-age children, more detail about the specific characteristics of children with ASD can be given; however, the discussion should continue to focus on providing examples and observable behaviors.

The second phase (Step 2b) focuses on training and supporting peers by introducing specific strategies one at a time and then practicing them with the adult trainer. Peers are taught to take part in the intervention during daily training sessions and may require four or five sessions to reliably learn the initiation strategies (Strain & Odom, 1986). Peers learn specific behaviors that are used to facilitate play and social interaction during learning activities. These behaviors include:

- organizing play (making suggestions for play activity, role, or other play for peers);
- sharing (offering, giving, or accepting a play material to/from focal child);
- providing assistance (helping focal child to complete a task, get on play equipment, or respond to requests for assistance); and
- providing affection and praise through hugging, putting arms around, patting, holding hands, shaking hands (Odom et al., 1993; Strain & Odom, 1986).

After the teachers describe the skills, they demonstrate the skill in a role play with one of the peers. Other peers watch and identify when the teacher uses the skill in the demonstration. The adult then has the child use the skill in a role play with one of the other peers in the group. Prompts or suggestions are provided to the peers as necessary. Adults also provide subtle reinforcements (e.g., pats on the back, thumbs up) during the practice session to encourage the peers’ use of the strategies. At the end of the practice session, adults provide more explicit reinforcement and feedback (e.g., “I liked the way you handed me the block to put on the tower you were building”) so that children are motivated to continue participation (Timler, Vogler-Elias, & McGill, 2007).

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### **Step 3. Peer and Focal Child Interaction in a Structured Play Setting**

In the initial training sessions, only peers are included. To help peers practice skills further, they then participate in structured play sessions with the focal child. In daily play sessions that last approximately five to eight minutes, the teacher introduces the play activity, provides prompts to the peer, and reinforces behavior as necessary. At the conclusion of the activity, children can then go on to another setting or remain in the activity if they wish. Once peers have become proficient, teachers implement daily activities with the focal child and peers with reduced prompting and reinforcement.

### **Step 4. Implementing in Classroom Settings**

When planning and implementing peer-mediated interactions within classrooms, several factors should be addressed to promote the success of the activities: (A) classroom arrangement, (B) material selection, (C) identification of responsible staff, and (D) the use of prompts and reinforcement.

- A. *Classroom arrangement.* Peer-initiated learning activities should be a part of the daily schedule and should take place at approximately the same time each day in a relatively quiet area of the classroom that is free from distractions. At least 15 minutes should be allowed for each play session, including the transition to and from the activity. Play activities should not take place during preferred activities such as outdoor play that could interfere with the peers' motivation to participate. Having a consistent time and place for these activities will help children with ASD transition to the activity more smoothly and will increase the likelihood that social interactions will occur because they will know what is expected of them. As children become more proficient and as interactions become more naturalistic, peer-initiation strategies can take place in all classroom routines and activities, both planned and spontaneous.
- B. *Material selection.* One way to increase peer interactions and social engagement is to limit the play materials to items that (1) contain a specific theme for each play session (e.g., blocks, prop box), (2) include an element of sociodramatic play, (3) may require assistance in operating, and (4) are not normally available in the classroom. Specific activities and materials that promote social interaction between peers and children with ASD include the following:
  - i. Sand table
  - ii. Birthday party prop box
  - iii. Dollhouse and toy people
  - iv. Road-building materials with cars and trucks
  - v. Car garage
  - vi. Doctor
  - vii. Farm animals and blocks
  - viii. Grocery store
  - ix. Play-Doh
  - x. Puppet show
  - xi. Puzzles
  - xii. Zoo animals (Odom et al., 1993)

These types of activities encourage sharing, exchanging of materials, and other social behaviors that children with ASD often need to develop.

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- C. *Identification of responsible staff.* During the play sessions, one staff member in the classroom should be consistently responsible for running and supervising play. This adult will (1) train peers, (2) implement the learning activities, and (3) observe child progress.
- D. *Use of prompts and reinforcement.* The use of prompts and reinforcement is essential to the success of peer initiation training. When prompting social exchanges, practitioners should use the following guidelines:
  - i. **Observe children to identify non-interaction.** When there has been no interaction between the focal child and peers for 30 seconds, a prompt should be provided.
  - ii. **Provide a prompt to the peer or the focal child to begin an interaction or respond to an initiation.**

Prompting often involves cueing the peers to use the strategies through the use of explicit instructions (e.g., suggest a game to play; “Try talking about Taylor’s animals”), more subtle verbal instructions (e.g., “It’s your turn to talk,” “Try again”), picture cues (e.g., a drawing of two children talking), or gestures such as signaling the peer to move closer to the focal child (Goldstein, Schneider, & Thiemann, 2007). If the child does not respond to the prompt within 10 seconds, repeat the prompt again and provide physical guidance (Ostrosky et al., 1990).

As peers become more proficient at engaging children with ASD in play, practitioners can withdraw their use of prompts and reinforcement. If the peers and focal children are engaging in relatively few social interactions, practitioners should temporarily increase the use of prompting and reinforcement to ensure that social interactions are occurring with a high level of frequency. Gradual withdrawal of prompts and reinforcement will allow practitioners to periodically assess the progress of individual children.

### **Step 5. Extending Initiations Across the Day**

The final phase of the implementation process is to extend initiations across the day so that the focal children can begin to generalize skills. This can be accomplished through the use of two strategies: (1) embedded intervention and (2) classwide peer buddy system.

With an embedded intervention approach, instruction is provided within child-initiated, naturalistic, and contextualized interactions. For example, a teacher might seat a trained peer next to the focal child during a small group art activity with a limited number of materials to promote social interactions. The peer could be prompted to ask the child with ASD to pass the paint or assist the child in gluing. Practitioners should plan to include peer initiation strategies within at least three classroom routines and activities per day. The use of an activity matrix may help practitioners organize the activities and provides a structure for making sure that the learning opportunities occur.

A class-wide peer buddy system also can be used to increase the number of peers who interact with the focal child. With this approach, children in the class have different play partners each day. A chart can be created that displays pairs of children’s names printed on individual cards. Each day, the cards are systematically rotated so that each child has the opportunity to buddy with a different peer. At “buddy time,” children check the chart and find their name as well as the name of their buddy. During free play, children play with their buddies. Teachers prompt interactions as needed during this time. Prior to “buddy time,” peers are taught the following skills:

- *Stay with your buddy.* Peers learn that they must stay with their buddy in the same area, playing and taking turns. However, they do not need to continually play with the same toys.

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- *Play with your buddy.* Peers are taught to stay in the same area with their buddy and play with the same materials by joining in their buddy's activity, offering toys, and asking their buddy if they would like to play.
- *Talk to your buddy.* Peers are taught to (1) talk to their buddy about what they are playing with, (2) play pretend games, and (3) talk to each other while engaging in pretend play activities.

To increase motivation to participate, peers are told that if they stay with their buddy, play together, and talk to one another, they will be able to put their name in a box. Every day, a pair of names is pulled out of the box. The selected pair receives a special treat (e.g., candy, sticker, treasure, prize). This reinforcement strategy is withdrawn as children become more proficient at staying with their buddies (English, Goldstein, & Shafer, 1997; Laushey & Heflin, 2000).

### Steps for Elementary, Middle, and High School Implementation

#### **Step 1. Selecting Peers**

The first step in implementing peer social networks is to initially select peers who will provide social support to the focal student. Selected peers should:

- exhibit good social skills, language, and be well-liked by peers;
- have similar schedules or academic groupings as the focal child; and
- express a willingness to participate.

Teachers also should obtain parent permission, particularly if organized social events take place after school. At least six peers should be selected by teachers to participate so that peer/focal student dyads can be rotated. Teachers should plan to include one to two peers in the peer social network activities for a minimum of three to four months to promote acquisition of skills. After this time period, additional peers can be included to promote generalization of skills (Carter & Kennedy, 2006; Thiemann, 2007; Utley, Mortweet, & Greenwood, 1997).

#### **Step 2. Training Peers**

The specific content of the peer training sessions will vary according to the age of the students. The specific activities for training elementary, middle school, and high school students are provided below.

*Elementary School.* The initial training sessions with elementary school students should take place in an area of the classroom that is quiet and free from distraction. During the training sessions, peers learn specific behaviors that are used to facilitate social interactions during structured activities. They include:

- Initiating interactions
- Responding to initiations
- Keeping an interaction going
- Starting and engaging in conversations (e.g., greetings, topics)
- Giving and accepting compliments
- Taking turns and sharing
- Helping others and asking for help
- Including others in activities (Kamps et al., 1992; Thiemann, 2007; Thiemann & Goldstein, 2001)

*Appreciating individual differences.* At the beginning of the training session, the adult trainer teaches the pre-selected peers to recognize and appreciate individual differences. For example, teachers engage the peers in a brief discussion about individual differences and similarities that exist between peers and the focal students. At

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this time, the teacher also provides descriptions of the focal students, including their level of communication, likes, and dislikes.

*Identifying preferred activities of focal student.* Teachers then engage peers in a discussion about the specific games and activities that the focal student enjoys. Preferred activities will most likely become the activities in which peer support will be provided. Teachers can use a dry-erase board or chart paper to record a list of these preferred activities, as well as the possible social interactions that could occur between the peers and the focal student.

*Generating scripts for interactions with focal student.* Teachers should encourage peers to generate words or phrases that they can say during these preferred activities that match the target skills (responding to peers, maintaining conversations and interactions with peers, initiating interactions) for focal students. These phrases are written on a skill sheet with a label of the target skill at the top and a picture of two students with topic bubbles. The phrases or words are written in the topic bubbles. A list of prompts and models that might be necessary to promote social interactions also can be generated by teachers and peers at this time (Sasso et al., 1998). The target skill sheets can be placed in the activity area to provide a “script” for the interaction and provides peers and the focal student with information about what to do, what to say, and how to respond. Scripts can be particularly helpful with school-aged students because they help them organize social information while also providing continuous access to ideas, comments, and questions related to the activity.

After the initial brainstorming session, peers are taught to “look, wait, and listen.” This approach allows the focal student time to initiate and/or respond to a peer. The teacher also role plays with a peer to provide an example of how to use the skill in an activity. Peers have the opportunity to role play with one another to further practice the use of the target skill. Following each role play, the teacher provides feedback and reinforcement for participating in the activity (Garrison-Harrell, Kamps, & Kravits, 1997; Haring & Breen, 1992; Pierce & Schreibman, 1995; Thiemann, 2007).

*Middle and High School.* Because middle and high school students do not remain in one classroom for the entire day and often have different teachers for specific subjects, a special educator may be the most appropriate person to implement peer support network interventions. Training middle and high school students involves less direct instruction by the special educator and more active participation in the development of peer network interventions. During initial training sessions, peers are provided with (1) the goals for this intervention and the rationale for their involvement in the intervention activities (to help the focal student respond to peers, maintain conversations and interactions with peers, and initiate interactions with peers); (2) an overview of what is expected of them during their interactions with the focal student; and (3) information about how students with ASD communicate, interact with their environment, and learn (Carter & Kennedy, 2006). The special educator also may provide descriptions of the focal student’s likes and dislikes.

Next, special educators describe basic strategies peers can use to support the focal student during social interactions. These strategies include:

- Providing frequent, positive feedback
- Modeling contextually relevant communication skills
- Facilitating interactions with other peers (Carter & Kennedy, 2006)

Special educators should model the use of these strategies with peers at this time. Peers also can role play with one another to practice skills.

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At the conclusion of the activity, the special educator and peers discuss when and where the focal student may need support from peers to engage in social exchanges with others. For instance, peers write down their daily class schedules and match them with the focal student's schedule. A schedule of interactions is then developed based upon the times the focal student needs additional support and when one of the peers is available to provide this support. The special educator and peers also identify methods for prompting and reinforcing the focal student's social interactions. Peers are provided with a notebook that they will use to record anecdotal information following each intervention activity. The information that peers include in their notebooks will be used during weekly meetings to problem-solve how to further support the focal student, as well as ways in which the intervention can be improved. The initial training may occur over two to four class periods, depending on the support needs of the focal student as well as the school activities that will serve as the context for implementing the interventions (Carter & Kennedy, 2006; Haring & Breen, 1992).

### **Step 3. Supporting Peers**

Another important step in the implementation process is to provide ongoing support and feedback to peers. Similar to the training component of the intervention, follow-up support for peers will vary according to the age of the students. The following discussion describes how teachers and other professionals can support peers at different ages.

*Elementary School.* After the initial training sessions, specific strategies (providing frequent, positive feedback; modeling contextually relevant communication skills; and facilitating interactions with other peers) that can be used to support the focal student during social interactions are modeled during a planned activity involving peers and the focal student. Teachers also make any individualized curricular and instructional adaptations that are needed for the focal student to participate fully. For example, the teacher may provide the focal student with a "script" that was developed by peers prior to the intervention activity. As peers become more proficient at supporting the focal student during daily activities, teachers decrease their level of involvement. This allows peers to assume the primary role of providing social support to the focal student (e.g., clarifying instructions, offering choices, supporting participation at lunch or recess). Peers may continue to need occasional prompting, however, to interact with the focal student during peer social network activities (Carter & Hughes, 2007).

*Middle and High School.* Weekly problem-solving meetings are the primary ways in which special educators provide ongoing support and feedback to peers. Classroom teachers also may be included if the peer support interventions are being implemented during their class period. The purpose of these activities is to encourage peer involvement and input as well as minimize the special educator's role in the scheduling and identification of interaction strategies. Special educators conduct the sessions; however, peers are actively involved through open discussion, problem solving, and sharing of anecdotal information from their notebooks (Carter & Hughes, 2007). A standard format is recommended to help organize each session and includes the following:

- Assess the previous week's interactions through an open discussion among the special educator, teachers, and peers
- Modify the interaction schedule as needed by peer written and spoken feedback
- Identify target skills for focal student that will be addressed
- Discuss strategies that can be used by peers to facilitate social interactions between focal student and peers
- Role play or model strategies as needed
- Assess informally the satisfaction of peers regarding the network meetings and responsibilities
- Reinforce peers' participation through verbal praise, letters home, and occasional group social activities such as having pizza for lunch (Haring & Breen, 1992)

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### **Step 4. Implementing in Classroom Settings and Throughout the Day**

When planning and implementing peer-mediated interactions with older children and adolescents, several factors should be addressed to promote the success of peer social networks. They include:

- creating a supportive social environment,
- providing classroom learning opportunities,
- monitoring social interactions, and
- using prompts and reinforcement.

*Supportive social environment.* When implementing a peer social network approach in classrooms, teachers and other practitioners should focus on creating a social environment that supports peer to peer interactions. For example, teachers should keep peer social groups small (e.g., one to two peers), but continually rotate the peers included in the activities to promote generalization of skills. Seating trained peers next to the focal student during whole-class and small group activities increases the likelihood that interactions with peers will occur.

*Learning opportunities.* Peer social networking activities can occur throughout the school day; however, some activities are more likely to support positive social interactions than others. For example, ongoing classroom activities that are particularly conducive to supporting social interactions include the following:

- Small academic groups such as math and reading
- Class centers such as calendar and money activities, computers, puzzles
- Special areas such as physical education and library
- Card games such as memory and matching games, Go Fish, or Uno
- Board games such as Trouble, Kerplunk, and Don't Break the Ice (Kamps et al., 1997; Thiemann, 2007)

Lunch also is an appropriate time to incorporate peer social networks. However, specific materials and supports must be provided to the focal student and peers in order to successfully facilitate interactions. For example, peers can help teachers generate topic cards that they can use to start conversations with the focal student. Topics should be age-appropriate and focused on the interests of the focal student to promote optimal interactions. Other materials that can be used during lunchtime to increase peer social interactions include the following:

- Open-ended topic starters
- Funny photos or pictures
- Magazines
- Restaurant guides
- Photos taken by peers to use as topic starters
- School subject/events topic cards (Thiemann, 2007)

Peer social networks can also be used to promote social interactions at recess. Activities such as four square, basketball, monkey in the middle, frisbee, and map games are very appropriate activities for supporting peer interactions.

*Monitoring social interactions.* As peers assume the responsibility of providing ongoing support to the focal student, teachers should frequently monitor interactions and provide periodic feedback and assistance. This support will ensure that the adaptations, assistance, and interactions taking place are appropriate and relevant for the focal student. Feedback should be provided to peers at the end of each activity, class period, or during weekly problem-solving meetings.

## Peer-Mediated Instruction and Intervention (PMII)

*Use of prompts and reinforcement.* The use of prompts and reinforcement is integral to the success of peer social networks and promotes sustainable social interactions across time. With the peer social network approach, prompting and reinforcement are primarily provided by peers of the student with ASD. As such, teachers must focus on teaching peers how and when to deliver specific prompts and reinforcement to the focal student when they are needed. For example, teachers instruct peers to observe focal students during an activity and provide the necessary prompts if they do not interact with a peer or respond to another student's social initiations.

During peer social network activities, prompting may involve cueing the focal student with general verbal prompts while pointing to a written-text or picture cue (e.g., "Mary, what can you say?"). Written-text and picture cue cards prompt social behavior by displaying pictures of students interacting through the use of controlled, short phrases written at the focal student's reading and vocabulary level. The cue cards are functional, age-appropriate, and directly related to the target skill for each activity. These prompts are particularly useful because they are portable and are available to peers throughout the activity.

As the focal student is better able to interact with others, teachers direct peers to withdraw their use of prompts. This withdrawal of prompts is done under the direct supervision of the teacher or special educator. If the focal student is engaging in relatively few social interactions, practitioners should instruct peers to temporarily increase the use of prompting and reinforcement to ensure that social interactions are occurring with a high level of frequency. Gradual withdrawal of prompts and reinforcement will allow practitioners to periodically assess the progress of individual children.

### ***Step 5. Extending Initiations across the Day***

The final phase of the implementation process is to extend peer social networks across the day so that students with ASD can begin to generalize skills. Teachers should focus on extending peer social network activities across the day in activities that:

- occur in natural settings (e.g., recess, lunch, centers, games),
- occur in a minimum of two to three different routines each day,
- contain a choice of two activities during each session (both peers and the learners with ASD should be given opportunities to choose an activity each day),
- use five to eight games rotated every three to four months to promote generalization,
- keep the same group of four to six trained peers to promote interpersonal connections and friendships,
- are social in nature, and
- last a minimum of 10 minutes (Kamps et al., 1997; Thiemann, 2007)

The sample activity planning form helps teachers and special educators organize the focal student's daily schedule and identifies where additional support is needed by the student to engage in social interactions with peers.