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Supporting Peer Interactions for Students with Complex Communication Needs in Inclusive Settings: Paraeducator Roles

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Abstract

Purpose: This clinical focus article presents a review of literature supporting the importance of fostering positive peer interactions for students with complex communication needs. A resulting template is included to help guide educational teams, including speech-language pathologists (SLPs), in planning for paraeducator training specific to supporting peer interactions for children with CCN. This article summarizes the current literature available on inclusion and peer relationships for students with CCN in general education classrooms, and paraeducator roles and training. The World Health Organization (WHO) International Classification for Functioning, Disability and Health Children and Youth (ICF-CY) framework was consulted to help establish considerations relevant to paraeducator training. With many demands on the time of SLPs throughout the school day, paraeducators may offer an often untapped resource to help support positive peer relationships for students with CCN.

Conclusions: This article provides an overview of challenges that may impede positive peer relationships from developing in inclusive classroom settings, including ones related to: (1) the student with CCN, (2) the peers, (3) the AAC systems, or (4) the environment. The readers will be provided with a template to guide educational teams and SLPs in collaborating with paraeducators to foster positive peer interactions, including the following steps: (1) define goals for the student with CCN and determine supports required from paraeducators; (2) determine content of training for paraeducators; (3) choose an effective instructional approach; (4) establish a feasible training format; (5) implement the paraeducator training and evaluate outcomes to ensure benefits for students with CCN and their peers.

Keywords

Complex communication needs; Peer interactions; Paraeducator training

Circle time. Group work. Turn and talk with your partner. School days are packed with opportunities for students to interact with their classmates; however, for students with complex communication needs (CCN), participation in these routine classroom-based activities may not come so easily. Beukelman and Mirenda (2012) found that

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1.3% of all children have communication disabilities which impede their ability to express themselves with natural speech. This group includes students with cerebral palsy, intellectual developmental disabilities (IDD), autism spectrum disorder (ASD), Down syndrome, and other developmental disabilities (Light et al., 2019). For students with CCN, the communication disability may warrant the use of augmentative and alternative communication (AAC). AAC is an area of clinical practice that utilizes a variety of strategies, techniques, and tools to help individuals with CCN express themselves by supplementing existing speech or replacing speech that is absent or not functional (ASHA, n.d.).

School districts try to address integration of students with CCN into general education settings using full-time inclusive classrooms, push-in for certain subject areas, and peer buddy systems. These options are used to address mandates for the least restrictive environment (LRE) from the Individuals with Disabilities Education Act (IDEA) and a free appropriate public education (FAPE) from Section 504 of the Rehabilitation Act of 1973 (U.S. Department of Education [USDE], 2020). Despite these attempts, true inclusion involves not only the physical presence of a student with CCN in a general education classroom, but also planning for that student's meaningful participation and contribution (McNaughton, 2020). Planning for true inclusion of a student with CCN can be a challenging goal for educational teams. These plans will undoubtedly require accommodations or modifications to help the student participate meaningfully in classroom activities and interact successfully with peers.

Peer interactions are a key component of successful inclusion. Peer interactions are known to benefit the cognitive, language, and social development of children (Hartup, 1989; Umberson & Montez, 2010); however, these relationships can be difficult to form organically in the inclusive general education school setting for students with CCN. In fact, research shows that peer interactions occur infrequently in inclusive classrooms for students with disabilities (Carter et al., 2008). Peer interactions fall under the domain of communication and therefore should be regarded as important goals by the speech-language pathologist (SLP) working with the student with CCN. It is essential for SLPs and the entire educational team to address the question: How can we better plan for and facilitate positive peer relationships and experiences for students with CCN in inclusive settings?

Given the importance of positive peer interactions for students with CCN and the challenges that they typically face, the goals of this paper are to: (a) review the impact of inclusion and peer relationships for students with CCN; (b) discuss potential roles and responsibilities of peers; (c) apply the World Health Organization's International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY) as a roadmap for educational teams and SLPs to support positive peer relationships for students with CCN; (d) highlight specific environmental factors (i.e., physical and social) that may serve as barriers to forming peer relationships for students with CCN; (e) consider the role of paraeducators with students with CCN; and (f) guide educational teams in how to work with paraeducators to promote positive peer relationships with students with CCN.

Impact of Inclusion and Peer Relationships

Inclusion can be beneficial to both students with CCN and their typically developing peers. For students with CCN, successful inclusion can lead to the development of communication skills, positive academic outcomes, and natural opportunities for interactions with peers (De Boer et al., 2014). Inclusive settings may provide increased opportunities for peer interactions that may lead to a reduction of social isolation (McLeskey et al., 2014). A benefit of inclusion for all students is the provision of opportunities to develop and form positive peer relationships. Successful inclusion can result in increased understanding of differences and diversity by typically developing peers (Finke et al., 2009). Beck et al. (2010) found familiarity to be the greatest factor in peer acceptance of classmates with disabilities, which makes inclusive classroom settings a target location for increasing peer awareness of differences within other students. Kent-Walsh and Light (2003) reported that the single experience of being in class with a student who uses AAC may lead to increased awareness, acceptance, and compassion towards individuals with disabilities.

The inclusive classroom setting, when adequately planned for, can provide the ultimate environment for increasing the communicative competence of all students involved. Communicative competence is described by Light (1989) as the “quality of being functionally adequate in daily communication or having sufficient knowledge, judgment and skills to communicate” (p. 138). Participation in a wide range of interactions, including those with peers, is essential for the development of communicative competence by both students with CCN and peers with typical development.

The benefits of inclusive settings are not attained through limited physical inclusion of students with CCN; rather educational teams need to plan for and help foster positive peer relationships between students with CCN and their peers. Otherwise, peers may misunderstand differences and may struggle to communicate successfully with students with CCN, and adults in the classroom may unwittingly serve as barriers to access classmates with CCN (Cole-Lade & Bailey, 2020; Giangreco, 2010). Without the necessary supports for successful inclusion, students who use AAC may experience social isolation or bullying. Students with disabilities in third through 12th grade, were found to experience increased bully victimization rates over time in comparison to their same age peers (Rose & Gage, 2017). The US Department of Health and Human Services (2019) reported risk factors for bullying, including physical vulnerability, intolerant environments, and social skill challenges (USDE, 2020). Individuals with CCN may be at even greater risk for bullying as they may have difficulty reporting the problem to someone (Anderson et al., 2020; Beukelman & Light, 2020). Without effective supports for positive peer interactions, students who use AAC may have negative experiences with peers in the school setting that influence their motivation, attitudes, confidence, and communicative competence (Beck et al., 2000). All of these risk factors are likely to be perpetuated in inclusive settings if educational teams do not take action to foster positive peer relationships.

Potential Roles and Relationships for Peers of Students With CCN

In order to plan for successful inclusion, educational teams must recognize the range of roles and responsibilities consciously or unintentionally assigned to, or assumed, by the peers of students with CCN in inclusive settings. Peers are considered someone with equal standing as another in age, background, social status, or interests. Peers of students with CCN could be students of the same chronological age, students in the same classroom, students who show interest in making friends or students who simply encounter the individual with CCN throughout their day. Peer perceptions of their role in relationship to a student with CCN can vary greatly and may include friends, helpers, or collaborative teammates.

Peers as Friends

One role that peers may fulfill is that of a friend. Friendships are known to contribute to an individual's quality of life (Bukowski et al., 2011). These friendships may be linked to positive psychosocial, emotional, communication and academic development. Anderson et al. (2011) found benefits of friendship with an individual with CCN for peers such as learning new skills (e.g. AAC device, sign language), improving personal communication abilities, participating in quieter pastimes such as crafts and boardgames, and serving as a normalizer for the student with a disability. Therrien and Light (2018) highlighted the importance of preserving mutuality in interactions to promote friendships by assuring that both students are interested, engaged, and able to meaningfully contribute to shared activities. When mutuality is not maintained, a peer's role may shift into that of a helper or teacher. Educational teams must be careful when assigning helping responsibilities to friends of students with CCN; it is important that subsequent interactions continue to be perceived as positive experiences for the student with CCN and the peer (Meyer, 2001).

Peers as Models or Helpers

A common role of peers is that of a helper or model. This role may be chosen, assigned, or assumed by a peer. Modeling appropriate behavior and communication skills is a common role for peers in the general education setting. Teachers often assign students to work with a student with a disability as their helper. Although some peers may be willing to help students with AAC as their lunch buddy, recess buddy, line buddy or role model (Finke et al., 2009), other students may be resistant. Often a peer role as a helper may transition into that of an instructor (Beukelman & Light, 2020).

Peers as Collaborative Teammates

A third role of peers is as a teammate, group member, or partner to a student with CCN in collaborative learning experiences. Whether peers choose to work with the student with CCN or are assigned to work with that student, the role as a collaborative teammate is common in inclusive general education settings (Bucalos & Lingo, 2005). The proposed demands of an activity assigned may influence whether peers choose to independently work with or include a student with CCN (Anderson et al., 2020). Certain peers may be more comfortable in this role and enter the collaborative experience with knowledge about the student with CCN. Other peers may struggle due to the novelty of this role, unfamiliarity with the student with CCN, or demands intrinsic to the task assigned. For a collaborative

learning experience to be positive and productive for the students involved, the educational team must plan and take into consideration the skills and needs of all students.

Peers of students with complex communication needs can have a positive impact as friends, helpers, and collaborative teammates in general education settings. However, positive peer relationships do not typically develop without careful planning by the educational team, including the SLP. There are numerous challenges that must be addressed. Rather than placing a singular, narrow focus on the student with CCN, educational teams must consider a range of factors in the inclusive school setting, including ones related to the student with CCN, ones related to the peers and the broader social environment, and ones related to the physical environment including the AAC systems.

ICF-CY Framework as a Roadmap to Plan for Positive Peer Relationships

The World Health Organization (WHO) International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY) framework provides a relevant model for approaching the complexity of peer relationships in inclusive settings for students with CCN (WHO, 2007). The ICF-CY model, specifically designed for children and youth, proposes that disability is best described as a complex interaction between the features of a student and the features of the context in which that student functions (WHO, 2007). Therefore, when planning intervention with a student with CCN, it is necessary to consider both intrinsic or personal factors of the student and extrinsic or environmental factors (Light & McNaughton, 2015). It may be helpful to think of the ICF-CY model in relation to a case example of a student (Brandon) who has CCN, requires paraeducator support, and is pushed into an inclusive general education setting. Personal factors related to the student with complex communication needs and environmental factors, either physical and /or social, can serve as supports or barriers to the student's participation in the inclusive setting and to positive interactions with peers. Table 1 provides examples of potential barriers related to personal and environmental factors as well as examples of interventions to address these barriers.

Personal Factors

Personal factors to consider include the student's own characteristics, attributes, behaviors, and interests that may either support or hinder relationships with peers. WHO (2007) described personal factors as the "impact of attributes of the person" (p. 39). In the case example, Brandon is a 9-year-old student has a diagnosis of autism spectrum disorder (ASD). Due to ASD, Brandon's speech and language are impaired resulting in difficulties with both expressive and social language use. Consequently, he has difficulty with activities involving expressive communication, such as communicating with peers. These difficulties result in his restricted participation in the educational setting, as well as restricted social relationships.

Brandon, like many students with CCN, requires support to initiate and sustain participation with typically developing peers (Schepis et al., 2003). These skills must be targeted in intervention and supported in inclusive classrooms. Like many children who are developing communicative competence, Brandon would also benefit from enhancing his socio-relational

skills, that is the interpersonal skills that are the foundation for positive relationships with others (Light, 1989; Light & McNaughton, 2014). These skills include: demonstrating an interest in others, participating actively in interactions, being responsive to communication partners, putting partners at ease, and projecting a positive self-image (Light et al., 2003) (See Table 1). Brandon also has several personal factors that may support his interactions with peers. He is passionate about natural disasters and dinosaurs. He is also motivated to make new friends and try new activities. He is not shy about approaching other children and demonstrates confidence in his attempts to try novel games.

Environmental Factors

Environmental factors also have a substantial impact on the peer relationships of students with CCN, including considerations in both the student's physical and social environments. Physical factors that may impact peer interactions include the physical space, positioning, or resources available, including access to AAC. Social factors of the environment may include the attitudes, knowledge, and skills of peers (and adults) in the student's environment. For a student with CCN, it is likely that they will encounter both environmental factors that support peer interactions (e.g., a classroom teacher who provides opportunities for peers to interact with the student) as well as barriers (e.g., lack of a conducive space for setting up the AAC system). This complex interaction of environmental supports and barriers should be considered in order to promote positive peer interactions with students with CCN.

In the case example, Brandon uses AAC to support his communication, including a combination of speech approximations, gestures, and a speech generating device (SGD) with generative language capabilities. He requires a specific physical arrangement that is conducive to his system in the general education setting and needs adaptations to participate meaningfully with others in shared activities. He is surrounded by peers, receives support from a teacher and SLP, and is paired with a paraeducator throughout his school day.

Barriers in the Physical Environment—Table 1 provides some examples of specific barriers that may occur in the physical environment as well as examples of possible interventions to address these barriers. For example, barriers that are part of the physical environment may include the arrangement or lack of classroom space, student and AAC system positioning and setup, and the lack of planning for shared and meaningful activities that are accessible for a student with CCN. Many classrooms are not set up in a way that allows for students with CCN to sit near peers and use their AAC systems. Classroom size, furniture layout, desk configuration, and spatial position all require consideration or the physical space may impede a student's participation with peers. Similarly, the physical environment can be complicated by the presence of the student's AAC system. The student and the AAC system must be positioned and set up in a way that allows for proximity to and interaction with other classmates. According to Beukelman and Light (2020), environmental adaptation interventions are key to participation and may include space and location adaptations as well as physical structure adaptations to better support communication and social interaction.

Children with CCN require meaningful and motivating reciprocal activities to support their interactions with peers (Therrien & Light, 2018). Activity barriers may occur when educational staff fail to take into consideration what the student and peers regard as meaningful, motivating, and purposeful activities (Woodgate et al., 2020). Some activities automatically exclude students with CCN from participating due to the nature of the requirements of the task (Anderson et al., 2011). The demands of a proposed activity may impact whether peers choose to include individuals with CCN (Woodgate et al., 2020). Many classroom activities and assignments may not be accessible for students with CCN without some adaptations. The educational team must consider how to best introduce or modify meaningful and motivating activities to support interactions for students with CCN and their peers (see Table 1).

Barriers in the Social Environment—Potential barriers in the social environment include factors related to the attitudes, knowledge, and skills of the student's teachers, SLPs, paraeducators, and especially their peers. Many students with CCN report awareness of their differences, struggles to keep up with peers, social isolation, and feelings of loneliness (Clarke & Kirton, 2003; Woodgate et al., 2020). AAC use may cause students to be viewed as different from their peers, which may in turn contribute to the development of negative peer attitudes (Beck et al., 2000). For peer relationships to be successful, early education about AAC could be helpful to reduce misunderstandings and potential feelings of pity from other students (De Boer et al., 2014).

Peers may view students who use AAC as less able to communicate and less emotionally responsive (Light et al., 2003). As a result, they may choose other classmates as preferred friends or speak to a paraeducator rather than directly to the student who relies on AAC. In general terms, it is more challenging for children to communicate with their peers as they are considered less predictable, less supportive, and less invested as communication partners compared to familiar adults (Therrien et al., 2016).

Peers may have difficulty accommodating to the needs of students who use AAC, which may impede participation for that student (Thiessen & Beukelman, 2013). Typically peers receive limited, if any, instruction on how to interact with student with CCN. Fortunately, the research suggests that peers can easily learn to recognize and accurately interpret the communicative attempts of students with CCN (including those with the most severe disabilities) after a very short training (Holyfield et al., 2018).

Interest mismatches, obligations to socialize rather than a desire to do so, and tendencies to communicate with someone other than the student who uses AAC (e.g., a paraeducator) are other potential roadblocks for classmates to interact with students with CCN (Kent-Walsh & Light, 2003). The physical presence of paraeducators in the close proximity in the environment may also inhibit peers from communicating with the student with CCN (Anderson et al., 2011). Educational teams and SLPs must consider a multitude of factors including personal factors related to the student with CCN and environmental factors, both physical and social, in order to support the development of positive peer relationships (see Table 1).

Despite knowledge of the benefits of inclusion for students with CCN, many continue to experience restricted participation and limited relationships with peers in the general education classroom. In fact, in a 200-hour observation of students who used AAC, Andzik and colleagues (2016) found that only 9% of communication interactions were initiated by students who relied on AAC, only 3% of those opportunities were with peers, and 35% of the students with used AAC never interacted with their peers. In another study, 16 students who used AAC in inclusive classrooms were observed and were found to interact almost exclusively with their assigned paraeducator or special education teacher. These students made inconsistent responses to peers (Chung et al., 2012).

Clearly there is a dire need for intervention in inclusive settings to support positive peer relationships for students with CCN. SLPs and other educational team members, such as classroom teachers, already have numerous demands on their time and they are typically not available to support peer interactions throughout the school day. In contrast, paraeducators have significant knowledge of the students with whom they work (Finke et al., 2009), and are typically available throughout the school day, especially during social contexts (e.g., lunch, recess, specials), which may be optimal for supporting positive interactions with peers. As a result, paraeducators may be better suited to support peer relationships than teachers or SLPs.

Typically paraeducators do not have significant training in AAC or peer interactions and are frequently not included in collaboration involving the student with CCN (Cole-Lade & Bailey, 2020). However, with appropriate training and support, paraeducators could play a key role in supporting positive peer interactions for students who rely on AAC.

Roles of Paraeducators of Students With CCN

The No Child Left Behind Act (2001) defined paraeducators as “adults who support children with disabilities in educational settings and work under the supervision of teachers or professional practitioners” (Kuenzi, 2008, p. 4). The Every Student Succeeds Act (ESSA) of 2015 indicated that paraeducator requirements vary dependent upon employment in a Title I or Title II school setting. Each state is responsible for their own requirements, which may vary. Many states, such as Pennsylvania and California, require a high school diploma or equivalent, two years of study at an institution of higher education or an associate’s degree, and completion of a state assessment for quality. Paraeducators, synonymous to paraprofessionals, teacher assistants, and teacher aides, are a diverse set of individuals in a school system. Experiences and skills of paraeducators may vary greatly from person to person (Cole-Lade & Bailey, 2020). Paraeducators may see and know things about the students with whom they work that are unknown to any other professionals in the school setting.

It is essential to note that paraeducators are not the same as speech-language pathology assistants (SLPAs). SLPAs are “support personnel who, following academic coursework, fieldwork, and on-the-job training, perform tasks prescribed, directed, and supervised by ASHA-certified speech-language pathologists” (ASHA, 2021). Although paraeducators may be assigned to support students with communication needs, they are not directed and

supervised by SLPs. Paraeducators are hired by school districts or educational institutions and supervised by teachers or educational professional practitioners (Kuenzi, 2008).

Historically, paraeducator support focused more on helping teachers with instruction, tutoring and management of classroom behavior (Bingham et al., 2007). Recently, an increasing number of paraeducators have been hired due to the emphasis on inclusion (Kuenzi, 2008). This emphasis reflects that more students with disabilities require paraeducator support to take part in inclusive settings. The research suggests that paraeducators are crucial and invaluable to implementing inclusion and AAC use in the classroom for students with CCN (Kent-Walsh & Light, 2003). Paraeducators typically accompany a student with CCN throughout the school day as they participate across settings with different people. They can serve as a model for the target student and peers (Cole-Lade & Bailey, 2020). In order to maximize their effectiveness, paraeducators require knowledge and skills specific to the student's AAC system(s), positioning requirements, adaptation of materials, instructional modifications, effective interaction strategies, and problem solving to maximize the student's participation in the classroom setting, including interactions with peers (Beukelman & Light, 2020).

For paraeducators to best support the students with whom they work, they must be a part of the discussions and meetings surrounding that student's plan and develop a shared sense of ownership for the student's success (Cole-Lade & Bailey, 2020; Downing et al., 2000). "Emphasizing the important role of paraeducators and treating them as vital team members can benefit the child and all other team members, as well as impact how the future teams may value the paraeducator's role particularly in these tight financial times" (Cole-Lade & Bailey, 2020, p. 155). All members of the IEP team, including paraeducators, should have frequent communication to better understand the importance of shared strategy use across settings and communication partners (Beukelman & Mirenda, 2012).

Unfortunately, many educational teams fail to capitalize on the potential support of paraeducators. The paraeducator role is often viewed as the "least professional" and consequently paraeducators are excluded from collaboration surrounding the students with whom they work (Bacon & Causton-Theoharis, 2013). Paraeducators may be assigned to work with the most difficult or complex students, and they may receive minimal training to do so (Giangreco et al., 2002). They may feel underprepared to meet the needs of students they serve (Giangreco, 2003). Unfortunately, there is often significant turnover amongst paraeducators, necessitating ongoing training (Beukelman & Light, 2020).

If paraeducators are not well prepared to support positive peer relationships, they may unknowingly hinder students who use AAC from participating with peers. Kent-Walsh and Light (2003) found that often peers speak to paraeducators rather than the student who relies on AAC. Without realizing it, paraeducators may increase social isolation for students with disabilities. Paraeducator proximity to a student may have a negative impact on peer interactions, as classmates may view the paraeducator as a physical barrier to the student (Giangreco et al., 1997). Finally, paraeducators are often called upon to remove students with disabilities from the classroom to work with them in a one-to-one or quiet setting which may be further socially isolating for that student (Giangreco et al., 1997).

It is imperative that educational teams provide time for SLPs to collaborate with paraeducators so that they are prepared to support (and not impede) positive peer relationships for students with CCN. The SLP can help ensure that the paraeducator is prepared to address the barriers in both the physical and social environment for the student with CCN. How can educational teams best prepare paraeducators to support meaningful participation and positive peer relationships for students with CCN in the general education setting? How can SLPs help support these collaboration and preparation attempts?

Collaborating with Paraeducators as Instruments of Change

Figure 1 provides an overview of the steps involved for educational teams in working with paraeducators to support positive peer relationships: (a) define the goals for the student with CCN and consider the support required, (b) determine the content of the paraeducator training, (c) choose an effective instructional approach, (d) establish a feasible training format, and (e) implement the training and evaluate outcomes.

Define the Goals for the Student with CCN and Consider the Support Required

The educational team, including the SLP, should start by defining specific goals for the students with CCN and their peers, and then determining the support that the students will require from the paraeducator to achieve the desired outcomes. SLP specific knowledge can help inform educational teams and assist in the development of paraeducator training related to the specific communication needs of the child. Keeping student perspectives in mind is also helpful to frame target outcomes. A focus group study involving 20 students (ages 8 to 16) with various disabilities found that these students placed significant importance on feeling as though they belonged and playing meaningful roles in interactions and activities with peers (Foley et al., 2012). Additionally when identifying target outcomes, the team should consider the specific needs of children with CCN who are also culturally and linguistically diverse (Soto & Yu, 2014). Paraeducator training content may need to incorporate tenets of a sociocultural approach by helping to facilitate more than one language for children with CCN who may be bilingual (Soto & Yu, 2014). Many possible student outcomes could be proposed to help develop paraeducator trainings.

One important outcome may be to positively impact peer attitudes towards students with CCN to promote feelings of belonging. Unfortunately students with CCN sometimes encounter attitude barriers in society. Attitude barriers are feelings that predispose someone to act in ways that may minimize the potential communication opportunities for someone who uses AAC and limit the development of meaningful social relationships (Beukelman & Light, 2020; McCarthy & Light, 2005). Attitude barriers could stem from adults or students in the school setting and may predict future behavior (De Boer et al., 2014). One way to instill positive attitudes amongst peers is to model these positive attitudes and inclusive actions. Educational professionals, including paraeducators, must be considerate and reflective of their own attitudes and actions. For an inclusive setting to provide a conducive environment to promote positive peer interactions for students with CCN, positive attitudes and an open mindset are paramount (Kent-Walsh & Light, 2003).

Research suggests that more positive peer interactions can be fostered by providing information to peers about the student with CCN to inform their interactions (e.g., what the AAC device is used for) (McCarthy & Light, 2005); however, meaningful opportunities for students who use AAC to interact with peers in their environment is the most powerful way to change attitudes (Beukelman & Light, 2020). These interactions must be between cooperative partners seen as equal status to one another, and the interactions need to be reciprocal. For this to occur, careful consideration should be given to the training content provided to paraeducators to ensure that they are best equipped to support cooperative learning and reciprocal relationships between peers and the target student who relies on AAC. This outcome requires the paraeducator to provide support to the student's social environment by helping peers to use appropriate strategies for interaction and by continuing to address the socio-relational skills of the student who uses AAC, within the context of meaningful activities.

Another key outcome of intervention is to decrease negative behavior or bullying directed toward students with CCN in inclusive settings. The U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) provided recommendations to foster positive school climates focused on safe and empowered environments where peers stand up for one another (Brynn, 2011). While school settings are encouraged to promote anti-bullying curriculums which may impact student attitudes towards peers with differences, attitudes and behaviors are not synonymous to one another (Beck et al., 2010). Discrepancies may arise from a situation, disposition or motivation that causes a person to act in a way which does not align with their attitude towards a person. Thus interventions must extend beyond simply targeting positive attitudes and must also ensure that peers act in ways that include the student with CCN. Paraeducators may be in a primary position for modeling not only positive attitudes, but also accepting and tolerant behavior towards the student with CCN. Furthermore they may provide support in setting up opportunities for meaningful, motivating, and reciprocal interactions between students with CCN and their peers.

Determine the Content of the Paraeducator Training

Once the team has determined the supports that students with CCN and their peers will require to engage in positive and meaningful interactions, then they need to determine what strategies and techniques the paraeducator needs to learn to provide effective support. The training will be most effective if the content targets each of the key potential barriers to positive peer interactions, including those related to the student with CCN, peer mediated strategies, and environmental arrangements (Light & McNaughton, 2014). "Approaching social interaction by working with the child who uses AAC, the peer communication partner, and the environment is an evidence and theory-based approach" (Therrien et al., 2016, p.89). This approach will allow the paraeducator to impact change to personal factors as well as factors in both the physical and social environment of the student who relies on AAC.

Enhance Personal Factors: Build Socio-relational Skills of Student with CCN.

—Often students with CCN experience difficulties with socio-relational skills. As noted earlier, these skills are the interpersonal skills that are the foundation for positive

relationships with others. According to Light and McNaughton (2014), individuals with CCN may need to learn a range of interpersonal skills, including: (a) participating actively in interactions, (b) demonstrating interest in and responsiveness to communication partners, (c) demonstrating active listening skills, (d) putting communication partners at ease, (e) projecting a positive self-image, (f) giving feedback, and (g) handling conflict effectively. Challenges initiating and sustaining communication with peers may hamper the formation of positive peer relationships (Andzik & Cannella-Malone, 2019). If the educational team has identified building the socio-relational skills of the student with CCN as a goal, then the paraeducator may play an important role extending intervention into naturally occurring interactions with peers throughout the school day to ensure generalization. Beukelman and Light (2020) summarized a range of interventions that may enhance social interactions, including for example: conversational coaching (e.g., Hunt et al., 1991; O'Keefe & Dattilo, 1992); use of video visual scene displays (video VSDs) to capture experiences and support social interaction (e.g., Caron et al., 2018; Chapin et al., 2021); and use of partner-focused questions, which are focused on a communication partner's interests and experiences (e.g., Light et al., 1999). Paraeducator support can help students to learn to initiate and sustain interactions with peers by providing supports in the general education setting as required and then gradually fading these supports. Paraeducators can also encourage students with CCN to create an introduction strategy on their AAC systems to help build understanding with peers (Light & Binger, 1998). Similarly, if appropriate, paraeducators may work with students with CCN to self-disclose key information about their communication style or behaviors to peers. Self-disclosure may be a way for students with disabilities to present themselves in a favorable light and put peers at ease (Anderson et al., 2020). As students with CCN learn new socio-relational skills and begin to experience positive social interactions with peers, they will have more opportunities to interact with peers and learn new skills and they will have increased opportunities to observe and imitate the communication strategies used by their peers (Garfinkle & Schwartz, 2002).

Reduce Barriers in the Physical Environment—As noted earlier, students with CCN and their peers may have difficulty interacting because of barriers in the physical environment, including those related to the physical space, the AAC system, and activities.

Structure the Space or Context.: Facilitating positive peer relationships in the general education setting may require the paraeducator to physically move furniture in the classroom, help with positioning of the student near a peer, or carve out time to brainstorm with the peers and the student with CCN. In a recent study by Biggs et al. (2017), training paraeducators on how to better facilitate peer interactions decreased an over-reliance of paraeducators and helped them to feel more competent in meeting the needs of the target student. After training, physical proximity to peers increased for the students with CCN and peer supports provided to the students with CCN increased. While many of the support behaviors implemented by peers fell into the helping role such as prompting or reinforcing, the peers also helped promote access to and participation in class activities. Results showed that paraeducators were able to shift from focusing only on academics to also considering environmental and social-related supports to help facilitate peer interactions.

Paraeducators may require training not only to adjust the physical space and proximity of students, but also to utilize preferred contexts as an opportunity to facilitate social interactions between students with CCN and their peers. Preferred contexts, such as snack time, are more likely to facilitate greater communication and social engagement with peers (Theimann-Bourque et al., 2017). These activities also foster feelings of shared experiences between all children in the classroom. In a review of the research on interventions to promote peer interactions for individuals who use AAC, Therrien et al. (2016) found that there may be large gains in peer interactions when highly social contexts are targeted such as lunch and the time before class starts. Paraeducators should be trained to recognize ideal opportunities for peer interaction so they can better help facilitate communication opportunities.

Plan for Shared, Meaningful and Accessible Experiences.: Simply setting up the environment and identifying contexts for communication is not sufficient to ensure positive peer relationships. Students also need something to do together – they require shared, meaningful, motivating, and accessible activities. Student perspectives should be taken into consideration when choosing activities or programming for the student with CCN (Anderson et al., 2020). Paraeducators can play key roles in identifying the interests of students with CCN and their peers to ensure activities are motivating and meaningful. They can also assist the educational team in identifying barriers that limit the participation of students with disabilities in these activities and in determining necessary accommodations to support their participation (i.e., accommodations for vision, hearing, motor, cognitive, and/or speech/language impairments).

Since it is paraeducators that are with the students with CCN throughout the day, they may carry the responsibility to implement these accommodations or modifications to activities so that students with CCN can more fully participate. The educational team must collaborate with paraeducators to strategize the best ways for students who use AAC to play a meaningful role in classroom-based activities. Classroom-based activities such as partners or small group assignments may be one way to facilitate inclusion of a student with CCN. For example, if a small group assignment is prepared ahead of time, the teacher and paraeducator can ensure that a meaningful role is assigned to the student with CCN, such as using their AAC system to summarize key vocabulary for their group. A main ingredient for successful inclusion is the adaptation of curriculum and the time to collaborate as a team about how to best facilitate participation in peer interactions for students with CCN (Finke et al., 2009). Planning ahead of time can help reduce potential barriers to participation.

Identifying meaningful, motivating, reciprocal activities is key to facilitating positive interactions between peers and students with CCN and fostering potential friendships. It can be challenging for educational teams to identify appropriate activities to promote peer interactions across different ages. The research suggests a range of activities that have been used successfully as contexts in which to promote positive peer interactions: looking at popular books together such as Disney's Cars and Monsters, Inc. for preschool students (e.g., Therrien et al., 2016, Therrien & Light, 2018); watching favorite videos together recorded from portions of the student's favorite television shows (e.g., Chapin et al., 2021; Babb, 2020); playing board games together such as bingo and matching (e.g., Trottier et al.,

2011); or engaging in imaginative play with toys (e.g., Laubscher et al., 2019). These types of activities set up situations where students with CCN can be actively engaged and can be valued as friends by their peers.

Provide AAC System Support.: Students with CCN need to rely on AAC to interact in these types of activities with their peers. Thus, paraeducators need knowledge on many topics specific to AAC, including vocabulary selection to support peer interactions, AAC symbols to represent vocabulary concepts, access techniques, positioning considerations, and technical and troubleshooting support (McNaughton et al., 2019). In addition to this knowledge of the students' AAC supports, paraeducators also require skills in the implementation of AAC within naturally occurring contexts to promote peer interactions. Research suggests that communication partners can help to create meaningful opportunities for participation while assisting students to use their AAC systems effectively to communicate (Beukelman & Light, 2020). The use of targeted strategies by communication partners, such as paraeducators, can result in improved communication outcomes for students with CCN (Beukelman & Light, 2020; Douglas et al., 2013). For example, Douglas and colleagues taught paraeducators two strategies to support the interactions of students with CCN: IPLAN (i.e., identify activities for communication, provide means for communication, location and provide vocabulary, arrange environment, use interaction strategies) and MORE (i.e., model AAC, offer opportunities for communication, respond to communication, extend communication). They demonstrated that paraeducators can learn to use these strategies with training and that paraeducator use of these strategies increased the communication of students with CCN (Douglas et al., 2013). Similarly, Andzik and Cannella-Malone (2019) taught Opportunities to Initiate (OTI) and Least to Most Prompting (LTM) strategies to paraeducators to increase communication for students using AAC. Other strategies such as the use of expectant delay and modeling use of multiple modes of communication have also been proven effective and can be implemented by paraeducators to facilitate the student's use of AAC throughout the school day (Kent-Walsh et al., 2015).

Reduce Barriers in the Social Environment—In addition to ensuring that paraeducators are prepared to reduce barriers in the physical environment, the educational team must also prepare paraeducators to address supports in the student's social environment. Supporting communication for students with CCN must be a two-pronged approach, in which both the student who uses AAC and potential communication partners of the student (in this case, peers) are provided with instruction (Kent-Walsh & McNaughton, 2005). Training for paraeducators should emphasize that friendships between students are most apt to develop when there is equal status and cooperative interdependence, as well as support from adults (McCarthy & Light, 2005).

Teach Peer Strategies for Communication with Student with CCN.: Often peer interventions focus on sharing information about disability and AAC. These interventions, aimed at increasing peer knowledge, have had positive impacts on peer attitudes, but the changes have not been shown to last over time (De Boer et al., 2014). Opportunities for peers to directly interact with the students with disabilities may be much more effective in promoting positive peer interactions.

Many peers may not have had prior experience interacting with others who rely on AAC and they may benefit from learning skills to facilitate these interactions. A powerful way to impact peer interactions with students with CCN may be to train paraeducators to model effective ways to interact, highlighting similarities between the student with CCN and peers, identifying strengths of the student, teaching peer interaction skills (e.g., waiting and providing the opportunity for the student who uses AAC to communicate), and partnering students to increase interactions. Paraeducators benefit from training to learn these types of strategies; they were found to be better equipped to facilitate peer interactions after receiving training (Causton-Theoharis & Malmgren, 2005). Outcomes of paraeducator training included an increased rate of interactions between students with disabilities and their peers, and more opportunities for paraeducators to assist other students in the classroom (while supervising their target student from a distance). Relatively small changes in paraeducator behavior yielded substantial increases in student interactions (Causton-Theoharis & Malmgren, 2005).

Often peers benefit from learning specific interaction skills to support communication with students who rely on AAC. They may need to learn how to use the students' AAC systems, how to wait, and how to respond to students using AAC. Thiemann-Bourque and colleagues (2017) taught peers to initiate, respond to, and reinforce communication attempts of students with ASD. They found increased levels of peer-directed communication and reciprocity from the students with ASD and increased communicative acts towards the students with ASD from peers after the training. Paraeducators could be paramount in teaching peers these types of interaction skills if trained to do so.

Paraeducators can be helpful in imparting knowledge to peers about students with CCN and their communication. Paraeducators may provide this type of instruction for peers during one-on-one, in-person sessions or they may utilize online or technology-driven instruction. For example, Holyfield et al. (2018) implemented a very short mobile training that used video models to teach middle school peers to recognize and accurately interpret the presymbolic communicative behaviors of students with multiple disabilities and CCN. Prior to training, the peers had difficulty discriminating between communicative and non-communicative behaviors of the students with CCN. Following the short training, the peers were much more accurate and more confident in their interpretation of pre-symbolic and idiosyncratic communicative behaviors.

With appropriate training, paraeducators can learn to support the development of reciprocal relationships between students with CCN and their peers by setting up the environment, ensuring that meaningful participation can take place in motivating activities, encouraging reciprocal interactions, prompting students with CCN to use AAC as required, explaining the function and use of AAC to peers, and modeling interaction strategies for peers so that they can independently engage with the student who uses AAC. Ultimately, training should prepare paraeducators to enhance the personal skills of students with CCN and reduce barriers in both the physical and social environment. Such training is essential to equip paraeducators to support positive peer interactions for students with CCN in inclusive settings.

Choose an Effective Instructional Approach

With potential training content established, it is necessary to also consider instructional approaches that may be used to deliver the content effectively to paraeducators to support their learning, including collaborative planning, principles of adult instruction, and strategy instruction.

Collaborative Planning—Collaborative planning includes all members of the target student's educational team including the general education teacher, special education teacher, SLP, parent, and paraeducator. Trainings should highlight the paraeducator role as an essential member of the student's educational team. Once familiarized in this role, paraeducators can serve as powerful mediators between the educational team and the target student for the implementation of strategies and techniques as recommended by the team. Collaborative planning may help facilitate peer interactions with a student with CCN, by allowing the team to plan for the integration of communication in academic and social contexts across the school day (Biggs et al., 2017). Collaborative planning was found to support peer arrangements for students with CCN and ultimately increase peer interactions. Prior to the planning, students with CCN communicated primarily with their paraeducator; however, after collaborative planning, students with CCN communicated more frequently with their peer partners (Biggs et al., 2017).

Principles of Adult Instruction—Paraeducator trainings should consider principles of adult learning, such as focusing on information that is relevant, building on the prior knowledge that adults bring to trainings, and personalization of instruction (Thiessen & Beukelman, 2013). Hands-on activities and opportunities to practice with feedback are especially important when teaching AAC strategies and techniques to paraeducators. Strategies and techniques, such as troubleshooting AAC technology problems, adding relevant vocabulary to an AAC system, or setting up meaningful activities, require procedural learning and may be best learned through active practice with feedback (Beukelman & Light, 2020). Given the previous experiences of paraeducators in the classroom with their target students, trainings should include opportunities for reflection and consideration of factors relevant to that student and their participation with peers.

Strategy Instruction—A final instructional approach to consider is strategy instruction. The strategy instruction model is a set of steps used to implement training around a specific content matter. The steps of the strategy instruction model include: (a) description of target strategies including the rationale and benefits (in this case, paraeducator strategies to support peer interactions for the student with CCN), (b) modeling of targeted strategies, (c) rehearsal of targeted strategies, (d) controlled practice with prompting and timely feedback, (e) advanced practice with fading of prompting and feedback, and (f) plans for generalization and application in real-world settings (Kent-Walsh & McNaughton, 2005). Holyfield et al. (2018) highlighted the importance of buy-in, modeling, guided practice, and feedback as key in strategy instruction frameworks. Another essential component of strategy instruction may be the inclusion of self-evaluation. Paraeducators may benefit from being given the opportunity to answer questions about their implementation of the targeted strategies, the

impact of the strategies on the target student, and any modifications for the future (Douglas et al., 2013).

Establish a Feasible Training Format

After training content and instructional approaches are decided upon, the educational team must consider what paraeducator training format is most feasible and likely to be most effective and efficient. Within the context of a busy school schedule, when and how can the necessary paraeducator training occur? The research literature points to several different training formats to consider including: (a) in-person, small group or one-to-one training, (b) pyramidal teacher to paraeducator training, (c) web-based or technology-based training, and (d) hybrid training.

In-Person One-to-One or Small Group Training Format—Most commonly, communication partner training occurs one-to-one or in a small group (Binger et al., 2008). In-person styles of training can be effective since they allow for personalization to the members, appropriate pacing, and specific, timely feedback (Kent-Walsh et al., 2015). However, trainings can be difficult to schedule within the context of the school day and yearly calendar. Training in this format may be limited by scheduling availability, access, and school funding (Kent-Walsh et al., 2015). There are several existing trainings in this format that cover a wide range of topics relevant to paraeducators (see for example Douglas et al., 2013). However, to date no trainings have been developed for paraeducators to specifically target inclusion and positive peer relationships with students who rely on AAC. Another constraint of this training approach is that paraeducators may demonstrate initial acquisition of the skills taught but may require follow-up trainings to enhance and maintain strategy use across time (Douglas et al., 2013).

Pyramidal Teacher to Paraeducator Training Format—A second training format to consider is pyramidal training. “Teachers training their own classroom paraeducators is possibly one way of expanding a one-time professional development to a paraeducator training that, in turn, has the potential for direct student outcomes” (Andzik & Canella-Malone, 2019, p. 396). Pyramidal training is both cost and time efficient, as teachers can implement these trainings throughout the workday when necessary (Andzik & Cannella-Malone, 2019). This format also allows for customization to the particular paraeducator or the target student with CCN. Behavior Skills Training (BST), which includes modeling, role play, and feedback, is one type of pyramidal training format. Andzik and Cannella-Malone (2019) found a functional relationship between a BST pyramidal format provided to paraeducators by teachers and an increase in paraeducator performance using prompting strategies with students with CCN. If educational teams and administrators work together to create small gaps in schedules to allow for trainings, teachers and paraeducators would not need to commit to time past the normal workday to address skills relevant to working with students with CCN.

Web-based Training Format—Another potential training format is web-based or technology-based training of paraeducators, which may include online training modules, video exemplars of paraeducators facilitating peer interactions with students with CCN,

or short, Just-In-Time (JIT) trainings available via a student's AAC device or mobile technology. Douglas et al. (2013) found online instruction for paraeducators to be effective in increasing the number of communication opportunities and responses provided during play with young children with CCN. Using video models to train paraeducators is helpful because it allows for more than one exemplar of a target behavior and allows paraeducators to view the videos when time in their schedule permits (Holyfield et al., 2018). JIT trainings may be useful for orienting paraeducators to the preferred strategies used for working with a specific student (Light et al., 2019). Web-based or technology-based trainings are important to consider due to the accessibility, minimal time constraints, and application across settings and partners.

Hybrid Training Format—Finally, it may be best for educational teams to consider a hybrid approach to training paraeducators by combining two of the previously mentioned formats, such as pyramidal training and a web-based or JIT option. Educational teams may also consider medical-based approaches to training and information dissemination, such as daily rounds or briefings with paraeducators. Douglas et al. (2013) found that blended instruction formats may be a future technique for best practice in partner trainings for students with CCN.

Implement the Training and Evaluate Outcomes

The final step involves implementation of the training with paraeducators and evaluation of the outcomes of the training. Once the training has been implemented, it is critical to evaluate the impact of the training to determine if the paraeducator learned and is implementing the targeted knowledge and skills and to evaluate the impact of the paraeducators' strategies on the frequency of interactions between the student with CCN and peers, the effectiveness of these interactions, and the satisfaction of the participants (Beukelman & Light, 2020). Such evaluation will require observations of the student with CCN, peers, and paraeducator in naturally occurring interactions throughout the school day. It will also be important to collect social validation data to determine the impact of the training from the perspective of the paraeducator, teacher, student with CCN, and peers. Social validation data could be collected through interviews, questionnaires, and/or rating scales (Beukelman & Light, 2020). Talking Mats might be used with students with CCN and their peers depending on their needs and skills (Midtlin et al., 2014).

If evaluation data show attainment of targeted goals, then the educational team can identify next steps to build on the positive peer interactions that have been established. If evaluation data suggest problems, then the team and SLP can brainstorm potential solutions and modify training as required.

Conclusion

For the inclusion of students with disabilities to be successful, training of all professionals working with that student should be required. Commitment from school leadership, curriculum adaptations, collaboration time, and staff training were all found to be key components for successful, inclusive classrooms (Finke et al., 2009). Biggs et al. (2017) emphasized the need for collaboration to increase team communication and confidence

when working with students with CCN. Collaboration may extend beyond direct services to the student. Paraeducators can serve as knowledgeable advocates for supporting the student with CCN as well as others' understanding of that student (Cole-Lade & Bailey, 2020). If the entire team including paraeducators work together, expectations for the use of communication strategies to support the student can be kept consistent across settings and partners. Furthermore, when adequately trained, paraeducators have been found to deliver effective interventions to students with CCN (Mrachko & Kaczmarek, 2017). Educational teams must consider the long-lasting benefits of providing appropriate training for paraeducators so that they are prepared to support students with CCN.

With appropriate paraeducator training, typical school-day routines such as circle time, group work and turn and talk with a partner can become opportunities for meaningful interactions with peers for students with CCN. With paraeducators providing appropriate supports, peers can come to realize that students with CCN are of equal status and deserve to be treated with respect and dignity. Paraeducators can support the socio-relational skills of the student with CCN, structure the physical environment to be conducive for communication, and teach peers interaction strategies for communicating with students who use AAC. The inclusive classroom setting provides a small window of opportunity to foster long-lasting positive relationships between individuals with and without disabilities. SLPs are currently working to address communication goals for students with CCN in inclusive settings; however, workload responsibilities mean that SLPs cannot be with their students throughout the school day when social interactions are most likely to occur. Paraeducators can be influential in opening and maintaining the windows of opportunity in inclusive settings for children with CCN, if properly trained.

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References

American Speech-Language Hearing Association. (n.d.). Augmentative and alternative communication. American Speech-Language-Hearing Association. Retrieved November 29, 2020, from /practice-portal/professional-issues/augmentative-and-alternative-communication/

American Speech-Language Hearing Association. (2021). Frequently asked questions: Speech-language pathology assistants (SLPAs). American Speech-Language-Hearing Association. https://www.asha.org/assistants-certification-program/slpa-faqs/

Anderson K, Balandin S, & Clendon S (2011). "He cares about me and I care about him." Children's experiences of friendship with peers who use AAC. Augmentative and Alternative Communication, 27(2), 77–90. 10.3109/07434618.2011.577449 [PubMed: 21592003]

Anderson L (2020). Schooling for pupils with autism spectrum disorder: Parents' perspectives. Journal of Autism and Developmental Disorders, 50(12), 4356–4366. 10.1007/s10803-020-04496-2 [PubMed: 32277389]

Andzik N, & Cannella-Malone H (2019). Practitioner implementation of communication intervention with students with complex communication needs. American Journal on Intellectual and Developmental Disabilities, 124(5), 395–410. 10.1352/1944-7558-124.5.395 [PubMed: 31512945]

Andzik NR, Chung Y-C, & Kranak MP (2016). Communication opportunities for elementary school students who use augmentative and alternative communication. Augmentative and Alternative Communication, 32(4), 272–281. 10.1080/07434618.2016.1241299 [PubMed: 27819139]

Babb S (2020). "Two friends spending time together": The impact of video visual scene displays on peer social interactions for adolescents with autism spectrum disorder (Doctoral dissertation). http://etda.libraries.psu.edu/catalog/18195smb5623

Bacon JK, & Causton-Theoharis J (2013). 'It should be teamwork': A critical investigation of school practices and parent advocacy in special education. International Journal of Inclusive Education, 17(7), 682–699. 10.1080/13603116.2012.708060

Beck A, Fritz H, Keller A, & Dennis M (2000). Attitudes of school-aged children toward their peers who use augmentative and alternative communication. Augmentative and Alternative Communication, 16(1), 13–26. 10.1080/07434610012331278874

Beck AR, Thompson JR, Kosuwan K, & Prochnow JM (2010). The development and utilization of a scale to measure adolescents' attitudes toward peers who use augmentative and alternative communication (AAC) devices. Journal of Speech, Language and Hearing Research (Online); Rockville, 53(3), 572–587. 10.1044/1092-4388(2009/07-0140)

Beukelman DR, & Light JC (2020). Augmentative & alternative communication: Supporting children and adults with complex communication needs. Brookes Publishing. http://ebookcentral.proquest.com/lib/pensu/detail.action?docID=6229697

Beukelman DR, & Mirenda P (2012). Augmentative & alternative communication: Supporting children and adults with complex communication needs (Fourth). Brookes Publishing.

Biggs EE, Carter EW, & Gustafson J (2017). Efficacy of peer support arrangements to increase peer interaction and AAC use. American Journal on Intellectual and Developmental Disabilities; Washington, 122(1), 25–48,93,95. 10.1352/1944-7558-122.1.25

Binger C, Berens J, Kent-Walsh J, & Taylor S (2008). The effects of aided AAC interventions on AAC use, speech, and symbolic gestures. Seminars in Speech and Language, 29(2).

Bingham MA, Spooner F, & Browder D (2007). Training paraeducators to promote the use of augmentative and alternative communication by students with significant disabilities. Education and Training in Developmental Disabilities, 42(3), 339–352. JSTOR. https://www.jstor.org/stable/23879627

Bryn S (2011). Stop bullying now! A federal campaign for bullying prevention and intervention. Journal of School Violence, 10(2), 213–219. 10.1080/15388220.2011.557313

Bucalos AB, & Lingo AS (2005). Filling the potholes in the road to inclusion: Successful research-based strategies for intermediate and middle school students with mild disabilities. TEACHING Exceptional Children Plus, 1(4). https://eric.ed.gov/?id=EJ966515

Bukowski WM, Motzoi C, & Meyer F (2011). Friendship as process, function, and outcome. In Rubin K, Bukowski W, & Laursen B (Eds.), Handbook of peer interactions, relationships, and groups. The Guilford Press.

Jessica Caron, Christine Holyfield, Janice Light, & David McNaughton. (2018). "What have you been doing?": Supporting displaced talk through augmentative and alternative communication video visual scene display technology. Perspectives of the ASHA Special Interest Groups, 3(12), 123–135. 10.1044/persp3.SIG12.123

Carter EW, Sisco LG, Brown L, Brickham D, & Al-Khabbaz ZA (2008). Peer interactions and academic engagement of youth with developmental disabilities in inclusive middle and high school classrooms. American Journal on Mental Retardation, 113(6), 479–494. 10.1352/2008.113:479-494 [PubMed: 19127658]

Causton-Theoharis JN, & Malmgren KW (2005). Increasing peer interactions for students with severe disabilities via paraprofessional training. Exceptional Children, 71(4), 431–444. 10.1177/001440290507100403

Chapin SE, McNaughton D, Light J, McCoy A, Caron J, & Lee DL (2021). The effects of AAC video visual scene display technology on the communicative turns of preschoolers with autism spectrum disorder. Assistive Technology, 0(0), 1–11. 10.1080/10400435.2021.1893235

Chung Y-C, Carter EW, & Sisco LG (2012). Social interactions of students with disabilities who use augmentative and alternative communication in inclusive classrooms. American Journal on Intellectual and Developmental Disabilities; Washington, 117(5), 349–367. http://search.proquest.com/docview/1081340632/abstract/164EF1CAC9CF49DEPQ/1

Clarke M, & Kirton A (2003). Patterns of interaction between children with physical disabilities using augmentative and alternative communication systems and their peers. Child Language Teaching and Therapy, 19(2), 135–151. 10.1191/0265659003ct248oa

Cole-Lade GM, & Bailey LE (2020). Examining the role of paraeducators when supporting children with complex communication needs: A multiple case study. Teacher Education and Special Education, 43(2), 144–161. 10.1177/0888406419852778

De Boer A, Pijl SJ, Minnaert A, & Post W (2014). Evaluating the effectiveness of an intervention program to influence attitudes of students towards peers with disabilities. Journal of Autism and Developmental Disorders; New York, 44(3), 572–583. 10.1007/s10803-013-1908-6

Douglas SN, Light JC, & McNaughton DB (2013). Teaching paraeducators to support the communication of young children with complex communication needs. Topics in Early Childhood Special Education, 33(2), 91–101. 10.1177/0271121412467074

Downing JE, Ryndak DL, & Clark D (2000). Paraeducators in inclusive classrooms: Their own perceptions. Remedial and Special Education, 21(3), 171–181. 10.1177/074193250002100308

Finke EH, McNaughton DB, & Drager KDR (2009). “All children can and should have the opportunity to learn”: General education teachers’ perspectives on including children with autism spectrum disorder who require AAC. Augmentative and Alternative Communication, 25(2), 110–122. 10.1080/07434610902886206 [PubMed: 19444682]

Foley K-R, Blackmore AM, Girdler S, O’Donnell M, Glauert R, Llewellyn G, & Leonard H (2012). To feel belonged: The voices of children and youth with disabilities on the meaning of wellbeing. Child Indicators Research, 5(2), 375–391. 10.1007/s12187-011-9134-2

Garfinkle AN, & Schwartz IS (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. 10.1177/027112140202200103

Giangreco MF (2003). Working with paraprofessionals. Educational Leadership, 61, 50–53.

Giangreco MF (2010). One-to-one paraprofessionals for students with disabilities in inclusive classrooms: Is conventional wisdom wrong? Intellectual and Developmental Disabilities, 48(1), 1–13. 10.1352/1934-9556-48.1.1 [PubMed: 20503813]

Giangreco MF, Broer SM, & Edelman SW (2002). “That was then, this is now!” paraprofessional supports for students with disabilities in general education classrooms. Exceptionality, 10(1).

Giangreco MF, Edelman SW, Luiselli TE, & Macfarland SZC (1997). Helping or hovering? Effects of instructional assistant proximity on students with disabilities. Exceptional Children, 64(1), 7–18. 10.1177/001440299706400101

Hartup WW (1989). Social relationships and their developmental significance. American Psychologist, 44(2), 120–126. 10.1037/0003-066X.44.2.120

Holyfield C, Light J, Drager K, McNaughton D, & Gormley J (2018). Effect of AAC partner training using video on peers’ interpretation of the behaviors of presymbolic middle-schoolers with multiple disabilities*. Augmentative and Alternative Communication, 34(4), 301–310. 10.1080/07434618.2018.1508306 [PubMed: 30231642]

Hunt P, Alwell M, & Goetz L (1991). Interacting with peers through conversation turntaking with a communication book adaptation. Augmentative and Alternative Communication, 7(2), 117–126. 10.1080/07434619112331275783

Kent-Walsh J, & Light J (2003). General education teachers’ experiences with inclusion of students who use augmentative and alternative communication. Augmentative and Alternative Communication, 19(2), 104–124. 10.1080/0743461031000112043

Kent-Walsh J, & Mcnaughton D (2005). Communication partner instruction in AAC: Present practices and future directions. Augmentative and Alternative Communication, 21(3), 195–204. 10.1080/07434610400006646

Kent-Walsh J, Murza KA, Malani MD, & Binger C (2015). Effects of communication partner instruction on the communication of individuals using AAC: A meta-analysis. Augmentative and Alternative Communication, 31(4), 271–284. 10.3109/07434618.2015.1052153 [PubMed: 26059542]

Kuenzi JJ (2008). Paraprofessional quality and the no child left behind act of 2001. CRS Report for Congress, 6.

Laubscher E, Light J, & McNaughton D (2019). Effect of an application with video visual scene displays on communication during play: pilot study of a child with autism spectrum disorder and a peer. Augmentative and Alternative Communication, 35(4), 299–308. 10.1080/07434618.2019.1699160 [PubMed: 31833399]

Light J (1989). Toward a definition of communicative competence for individuals using augmentative and alternative communication systems. Augmentative and Alternative Communication, 5(2), 137–144. 10.1080/07434618912331275126

Light J, Arnold K, & Clark E (2003). Finding a place in the “social circle of life.” In Communicative competence for individuals who use AAC: From research to effective practice (pp. 361–397). Brookes Publishing.

Light JC, & Binger C (1998). Building communicative competence with individuals who use augmentative and alternative communication. Paul H. Brookes Publishing Company.

Light JC, Binger C, Agate TL, & Ramsay KN (1999). Teaching partner-focused questions to individuals who use augmentative and alternative communication to enhance their communicative competence. Journal of Speech, Language, and Hearing Research 10.1044/jslhr.4201.241

Light J, & McNaughton D (2014). Communicative competence for individuals who require augmentative and alternative communication: A new definition for a new era of communication? Augmentative and Alternative Communication, 30(1), 1–18. 10.3109/07434618.2014.885080 [PubMed: 30952185]

Light J, & Mcnaughton D (2015). Designing AAC research and intervention to improve outcomes for individuals with complex communication needs. Augmentative and Alternative Communication, 31(2), 85–96. 10.3109/07434618.2015.1036458 [PubMed: 25904008]

Light J, McNaughton D, & Caron J (2019). New and emerging AAC technology supports for children with complex communication needs and their communication partners: State of the science and future research directions. Augmentative and Alternative Communication, 35(1), 26–41. 10.1080/07434618.2018.1557251 [PubMed: 30648902]

McCarthy J, & Light J (2005). Attitudes toward individuals who use augmentative and alternative communication: Research review. Augmentative and Alternative Communication, 21(1), 41–55. 10.1080/07434610410001699753

McLeskey J, Waldron NL, & Redd L (2014). A case study of a highly effective, inclusive elementary school. The Journal of Special Education, 48(1), 59–70. 10.1177/0022466912440455

McNaughton D (2020). Intervention to enhance participation in education, employment, and community settings. In Beukelman DR & Light JC (Eds.), Augmentative & alternative communication: Supporting children and adults with complex communication needs. Brookes Publishing. http://ebookcentral.proquest.com/lib/pensu/detail.action?docID=6229697

McNaughton D, Light J, Beukelman DR, Klein C, Nieder D, & Nazareth G (2019). Building capacity in AAC: A person-centred approach to supporting participation by people with complex communication needs. Augmentative and Alternative Communication, 35(1), 56–68. 10.1080/07434618.2018.1556731 [PubMed: 30810411]

Meyer L (2001). The impact of inclusion on children’s lives: Multiple outcomes, and friendship in particular. International Journal of Disability Development and Education - INT J DISABIL DEV EDUC, 48, 9–31. 10.1080/10349120120036288

Midtlin HS, Næss K-AB, Taxt T, & Karlsen AV (2015). What communication strategies do AAC users want their communication partners to use? A preliminary study. Disability and Rehabilitation, 37(14), 1260–1267. 10.3109/09638288.2014.961659 [PubMed: 25243768]

Mrachko AA, & Kaczmarek LA (2017). Examining paraprofessional interventions to increase social communication for young children with ASD. Topics in Early Childhood Special Education, 37(1), 4–15. 10.1177/0271121416662870

O'Keefe B, & Dattilo J (1992). Teaching the response-recode form to adults with mental retardation using AAC systems. Augmentative and Alternative Communication, 8(3), 224–233. 10.1080/07434619212331276213

Rose CA, & Gage NA (2017). Exploring the involvement of bullying among students with disabilities over time. Exceptional Children, 83(3), 298–314. 10.1177/0014402916667587

Schepis MM, Reid DH, Ownbey J, & Clary J (2003). Training preschool staff to promote cooperative participation among young children with severe disabilities and their classmates. Research and Practice for Persons with Severe Disabilities, 28(1), 37–42. 10.2511/rpsd.28.1.37

Soto G, & Yu B (2014). Considerations for the provision of services to bilingual children who use augmentative and alternative communication. Augmentative and Alternative Communication, 30(1), 83–92. 10.3109/07434618.2013.878751 [PubMed: 24471987]

Therrien MCS, & Light JC (2018). Promoting peer interaction for preschool children with complex communication needs and autism spectrum disorder. American Journal of Speech - Language Pathology (Online); Rockville, 27(1), 207–221. 10.1044/2017_AJSLP-17-0104

Therrien MCS, Light J, & Pope L (2016). Systematic review of the effects of interventions to promote peer interactions for children who use aided AAC. Augmentative and Alternative Communication, 32(2), 81–93. 10.3109/07434618.2016.1146331 [PubMed: 26903484]

Thiemann-Bourque KS, McGuff S, & Goldstein H (2017). Training peer partners to use a speech-generating device with classmates with autism spectrum disorder: Exploring communication outcomes across preschool contexts. Journal of Speech, Language and Hearing Research (Online); Rockville, 60(9), 2648–2662. 10.1044/2017_JSLHR-L-17-0049

Thiessen A, & Beukelman DR (2013). Training communication partners of adults who rely on AAC: Co-construction of meaning. Perspectives on Augmentative and Alternative Communication, 22(1).

Trottier N, Kamp L, & Mirenda P (2011). Effects of peer-mediated instruction to teach use of speech-generating devices to students with autism in social game routines. Augmentative and Alternative Communication, 27(1), 26–39. 10.3109/07434618.2010.546810 [PubMed: 21284561]

Umberson D, & Montez J (2010). Social relationships and health: A flashpoint for health policy. Journal of Health and Social Behavior, 51(1_suppl), S54–S66. 10.1177/0022146510383501 [PubMed: 20943583]

U.S. Department of Education. (2017). Sec. 300.114 LRE requirements. Individuals with Disabilities Education Act https://sites.ed.gov/idea/regs/b/b/300.114

U.S. Department of Education. (2020a). About IDEA. Individuals with Disabilities Education Act. https://sites.ed.gov/idea/about-idea/

U.S. Department of Education. (2020b). Bullying and children and youth with disabilities and special health needs. Stopbullying.Gov. https://www.stopbullying.gov/bullying/special-needs

World Health Organization (Ed.). (2007). International classification of functioning, disability and health: Children & youth version; ICF-CY. World Health Organization.

Woodgate RL, Gonzalez M, Demczuk L, Snow WM, Barriage S, & Kirk S (2020). How do peers promote social inclusion of children with disabilities? A mixed-methods systematic review. Disability and Rehabilitation, 42(18), 2553–2579. 10.1080/09638288.2018.1561955 [PubMed: 30907279]

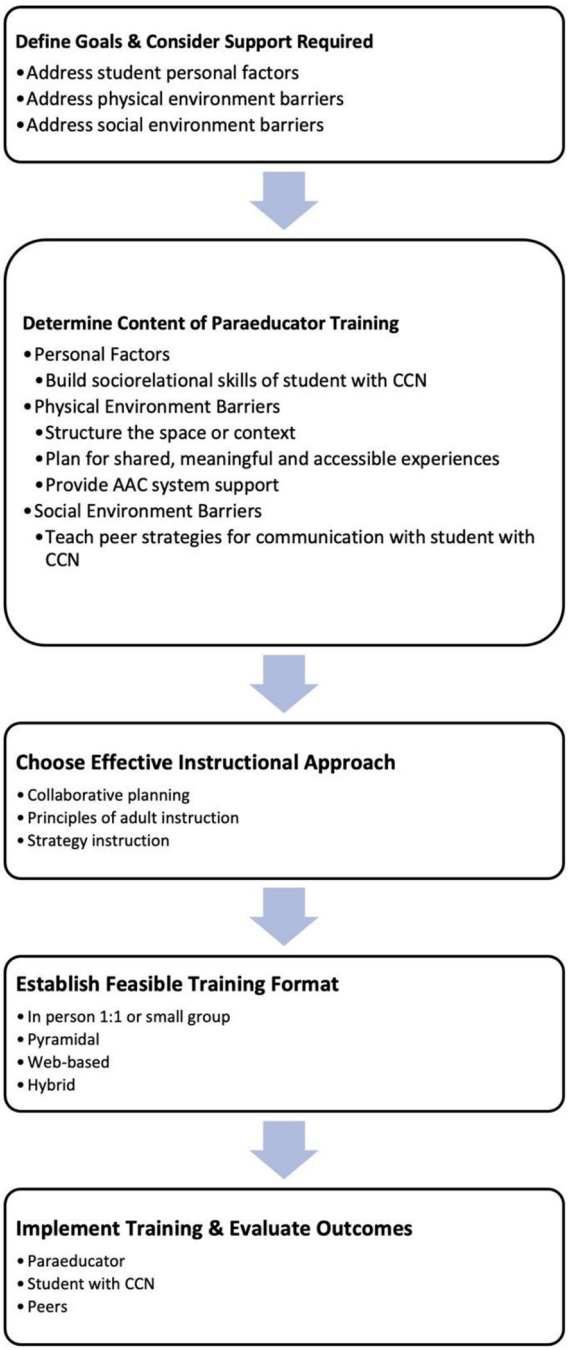

Figure 1.
Steps for Paraeducator Training to Support Positive Peer Interactions for Students with CCN

Table 1

Examples of Potential Barriers and Interventions to Support Positive Peer Interactions

Potential Barriers	Examples of Interventions
Personal Factors	
• Limitations in socio-relational skills	Teach student to demonstrate an interest in peers through partner-focused questions and activities
Physical Environment	
• Student always seated at back of classroom due to limited space for their adaptive equipment	Reorganize classroom furniture to accommodate student and AAC system Include student in central area in proximity to peers
• Peers are not familiar with AAC systems used by student with CCN	Demonstrate operation of AAC system for peers Show peers how to wait for student to communicate via AAC
• Lack of interesting and meaningful activities to support peer interactions	Introduce range of computer games, books, and videos that student with CCN can share with peers to support their interactions; provide something for them to do together
• Lack of access to class activities with peers; student with CCN works individually with paraeducator	Adapt curriculum as required Provide alternative ways for student with CCN to participate in collaborative learning activities
Social Environment	
• Peers are hesitant to work with student with CCN in classroom activities	Teach peers appropriate interaction strategies (e.g., how to ask questions and respond to student's communication)
• Peers attempt to include student with CCN, but do not provide wait time for the student to respond	Teach peers how to wait and provide the student with time to communicate
• Peers in the school are bullying the student with CCN	Introduce bystander intervention program with entire school to encourage peers to intervene when they witness bullying Provide positive opportunities for peers to interact with the student with CCN