Communication Approach for Students with Autism Spectrum Disorder: Picture Exchange Communication System

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Abstract

There is a range of intervention approaches for individuals with autism who have minimal verbal expressive language. This study reviews a commonly used low-tech option known as Picture Exchange Communication System (PECS) to teach functional communication to individuals through a multi-phase process. Through different research findings, the study will demonstrate factors influencing the effectiveness of PECS for communication development at a school setting. As seen in Ganz et al. (2012) meta-analysis, it has been determined that PECS can be effective in developing functional communication for individuals with autism.

Introduction

Autism Spectrum Disorder (ASD) is defined by the CDC (2018) as a developmental disability that can cause significant social, communication, and behavioral challenges. The CDC has estimated 1 in 44 children in the United States was identified with ASD in 2018. According to Ganz et al. (2012) meta-analysis, many children with autism lack adequate speech or other forms of functional communication. Hill and Flores (2014) noted spoken language is difficult to process for children with ASD, and their behaviors are viewed as noncompliant, causing frustration for the child and speaker. Ariwijaya (2020) explained that some individuals with high-functioning autism are more visual thinkers which systems like PECS are effective communication approaches. When teachers are developing the tasks and behavioral expectations within the classroom, using PECS as a visual reinforcement with auditory instruction provides a multi-modality communication for students. PECS is a form of an alternative and augmentative communication (AAC) system. PECS allows individuals with a severe disorder of speech-language production and or comprehension a means to communicate (Beukelman & Light, 2020, p. 4). Other AAC systems could be gestures, sign language, low-tech options with visuals, or a high technological approach with speech-generating devices.

A low-technology alternative augmentative communication system, Picture Exchange Communication System (PECS), was designed in 1985, to initially support preschoolers diagnosed with autism in the USA. PECS has expanded worldwide to all ages and various disabilities beyond ASD. (Bondy,2017).

PECS is a six-phase intervention designed to increase requesting skills, with secondary communication benefits of social-communicative behaviors that include eye contact, joint attention, or cooperative play (Boesch et al., 2013). Per Bondy (2012), the design of PECS was based on B.F. Skinner's book, Verbal Behavior. The approach begins by addressing simple requests and progresses through a series of steps with picture discrimination, and simple sentences to include requests or comments. PECS early phases were influenced by Skinner's theory in which the listener must respond exactly as requested to reinforce the speaker's behavior or understanding of vocabulary.

Methodology

Each phase includes a communicative partner (main teacher) and physical prompter (secondary teacher/ para) to support the student. Before Phase I begins, the teacher will observe the student during play and snack to identify student-selected reinforcers that are incorporated in a student's daily routines. (Charlop-Christy et al., 2002). The reinforcers are used in the early phases of instruction as a desired item the student will use their PECS to request.

The research of Chua and Poon (2018) breaks down the six phases of PECS described in the table below.

Phase	Description
I	The student learns to exchange single pictures for items they want; Two adults necessary; as communicative partner and physical prompter. The physical prompter will support student with physical exchange of picture while the communicative partner gives desired item. Fading of physical prompts as independent communication occurs by student.
II	Generalization has occurred and students will use picture exchange across different settings, and people and more distance from communicative partner to initiate communication. Physical prompter may aid the student to initiate communication by standing and walking to communicative partner to gain joint attention before picture exchanging.
III	Student discrimination between two choices of items to communicate desired item. Communicative partner will provide item per picture exchange, even if not student's desired item. Physical prompter may support student with prompts towards targeted item after multiple trials.
IV	A sentence strip with "I want…" is introduced. The student will add desired item to request to communicative partner. The communicative partner will read aloud what the student requested and reward the student with the targeted request and return the sentence strip back to the PECS book. Physical prompts fade for more independent and spontaneous communication.
V	The communicative partner asks the question, "What do you want?" to the student. Student will respond with sentence strip "I want …" by discriminating choices and handing response to communicative partner.
VI	Student learns to respond to "What do you see or hear?" questions using symbols "I see, or I hear" and can discriminate between other questions like, "What do you want?"
Post-PECS	Communicative partner will present new and abstract language concepts (numbers, colors, verbs, locations and 'yes,' 'no' questions.

Results

Odluyurt et al. (2016) study showed ASD students could initiate conversation and generalize PECS in different settings. PECS also provided the students with observational learning to increase accuracy of communication skills beyond the study. Charlop-Christy et al. (2002) study also noted that social-communicative behaviors increased with the aspects of initiating communication, requesting items and gaining joint-attention.

Patel (2005) recognized the three biggest barriers to AAC intervention are knowledge, practice, and attitude. Patel continues to show proper training of different AAC systems is a global challenge with special education as his study is in Israel. According to the research by Alexandra Da Fonte et al., (2022) most special education teachers gained experience with AACs (Augmentative and Alternative Communication) through informal on-the-job training, which limited their professional knowledge and skill. An example that affects students' progression of communication with AACs was explained by Bondy (2012). Bondy clarified the notion that PECS limits communication. What limits communication is the teachers not teaching beyond the "I want," or sentence strips in Phase IV or minimizes the utterance length by not providing enough communication options with picture cards. If students are limited with options and instruction, their progression is limited. Continuous and progressive education should be given to both the students and their teachers.

Pros of PECS (PICTURE EXCHANGE COMMUNICATION SYSTEM)	Cons of PECS (PICTURE EXCHANGE COMMUNICATION SYSTEM)
Teachers do not have to be tech savvy to implement PECS unlike other alternative and augmentative communication options.	Like other AACs, PECS may stay at school and not be accessible at home and other activities outside of school.
Visuals can be used with a broader range of listeners worldwide (Ariwijaya, 2020).	Limitation of choices. Whatever picture cards are available to the child is their only option to communicate, unless gesturing or verbalization is an option.
Improves social communication skills with initiating requests, joint attention, and interaction with peers (Lerna et al., 2014).	Not speech-generated to provide auditory bombardment from AAC (Augmentative and Alternative Communication).
Children have learned verbal language and decreased problematic behaviors while using PECS (Odluyurt et al., 2016).	Social communication with greetings and salutations are not often included in training or provided with cards.
Communication partners do not have to be familiar with PECS to understand the student's request, or communication; unlike other AAC's like sign language where communication partner needs to know the language. (Charlop-Christy et al., 2002).	Requesting for items increased but did not generalize into other areas per studies noted in Howlins et al. research (2007).
PECS is relatively low cost and portable (Charlop-Christy et al., 2002).	Lack of formal training and follow up or monitoring with teachers and support personnel implementing PECS (Howlins et al. 2007).

Conclusion

No matter the communication approach a student uses, the key to their success is access and support. First, the student should always have access to their AAC. Second, the support team must be educated and knowledgeable on how to implement the student's AAC within the educational setting. The PECS system is an AAC that can grow with each student's expanding vocabulary, and the teachers and speech-language pathologists need to be trained to recognize and know how to support that communication growth. There are challenges school systems face in supporting AAC systems. Training for teachers and other professionals to then provide one-to-one support to ASD students comes at a high cost per Odluyurt et al. (2016). Although needs and intentions are there to support ASD students with AACs, the training and budget may affect the overall quality and continuous support to manage necessary intervention.

Acknowledgements

References are attached with QR Code.

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