

Picture Exchange Communication System for Individuals with Autism Spectrum Disorder

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Autism spectrum disorder (ASD) is a neurological disorder that manifests itself within an individual through cognitive, social, and academic deficits. As is true for all spectrum disorders, each individual may experience a range of deficits with varying severity. Many students with autism spectrum disorder experience difficulty in some area of communication. The Picture Exchange Communication System (PECS) was developed in an effort to remedy the communication difficulties between individuals with severe ASD and their peers. The main goal of PECS is to enable students with communication deficits to spontaneously communicate with their peers. The system is composed of six different phases in which a student may progress with increasing independency. While many individuals with ASD are able to communicate effectively with PECS, such a system is not suitable for all individuals on the spectrum; therefore, it is imperative for professionals, parents, and peers to be knowledgeable of the implementation, utilization, and culmination of the Picture Exchange Communication System.

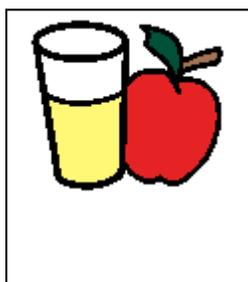
Many students with ASD who experience communication difficulties need an alternative way to interact with those who surround them. “The picture exchange communication system (PECS) was developed by Bondy and Frost to teach children with autism independent, self-initiated functional communication” (Lund & Troha, 2008). PECS is an example of augmentative and alternative communication (AAC). AAC is described by the International Society of Augmentative and Alternative Communication (ISAAC) as any additional method that helps an individual to communicate. Methods such as physical gestures or cues are referred to as unaided systems of AAC, as they enable an individual to communicate without additional equipment, while other methods such a picture book or a special computer are considered aided systems. AAC classifies PECS as an aided system of communication, as it relies on a student’s use of an individualized communication book (Zaccak, 2010).

The main goal of PECS is to enable children and adults with communication difficulties to spontaneously initiate communication exchanges through the use of small picture cards. In order to successfully reap the benefits of PECS, an individual should progress through six phases. The six phases of PECS are as follows:

In phase one, students are taught to initiate communication. The second phase expands the use of pictures. In the third phase, students make specific choices between available pictures. During the fourth phase, the student learns to build simple sentences. The fifth phase involves helping the student answer the question, “What do you want?” and in the sixth phase, students learn to comment about items and activities (Kluth, 2003).

While progressing through each of the phases in successive order results in the most desirable outcomes, students with ASD have celebrated successes in communicating with their peers within each of the individual steps. Because PECS is a hierarchical system, students will progress through each phase at their own rate as they master each successive goal.

Each phase of PECS involves preparation and procedure. Before introducing PECS to students with ASD, parents and professionals must first agree that the picture exchange system is the right alternative communication method for the student. Once parents and teachers agree, much preparation must be done before the student is actually subjected to any materials. Preparing to implement PECS necessitates much brainstorming. Initially, family members, professionals, and peers must collaborate to identify objects, activities, foods, or locations that strongly interest the child who will soon be introduced to PECS. Then, the collaborative team must decide on the representational model that the individual will use to communicate. This may consist of actual photographs, clip-art inspired graphics, or pictures from computer programs such as Boardmaker© that will be used for picture cards. After a representational model is chosen, the picture cards may be created. Typically, picture cards are pictures or graphics printed onto a square piece of paper which is then laminated. Every picture has the word of the object that is represented above or below the object. The size of the picture cards may vary depending on the phase of PECS that the individual is currently in or a specialized PECS program. The following is an example of a picture card from the Boardmaker© program that serves as the representational model for apple juice:



Apple juice

Velcro is taped onto the back of each picture card so that it may be secured into a child's communication book. A communication book is a binder or book with Velcro that contains all of the student's vocabulary or picture cards. After these picture cards are created, a professional should choose about 4 cards that will be of great interest to the child to begin the first phase of the PECS training.

Perhaps the most important element in the PECS introductory phase is maintaining the child's interest. To begin, the student should be seated with one adult behind him, the physical prompter who will assist the child, and a second adult directly in front of him, who is the communicative partner. First, the communicative partner should have the desired object in actual form (the physical object) and have the picture card on the table in between her and the student. Once the child reaches for the object, the physical prompter will assist the child in picking up the representational model or the picture card and hand it to the communicative partner. After the communicative partner receives the card, she should say a statement that reiterates the action and give the child the desired object. These steps are exemplified within the following scenario: the communicative partner has a toy in her hand. When the child attempts to grab the desired toy from her hand, the physical prompter takes the child's hand, guides his hand, has him pick up the picture card of "toy" and put it in the communicative partner's hands. When the communicative partner receives the card, she reiterates the action by saying "Oh, you want the toy!" and immediately hands him the toy. It is important to allow the child to enjoy his reward for some

time before immediately repeating the procedure. After numerous repetitions of the procedure, the physical prompter should diminish the physical assistance he provides to the student. Only when the student has mastered the ability to exchange the picture card with the associated object to his communicative partner should he move onto phase two (BBB Autism Support Network, 2010).

Phase two of PECS synthesizes the ability to exchange a picture for an object with the use of a communication book. As for preparation, a communication book is necessary to successfully train the student in phase two of PECS. The communicative partner should place one picture card in the communication book. When the child with ASD independently lifts the picture card out of his communication book, the communicative partner will provide him with his reward as in the first phase, but the distance between herself and the child will be increased for this exchange. It is important to change the picture cards that are used between these exchanges so the student generalizes the action, not the specific picture card. It is recommended that other individuals besides the educator or speech and language pathologist perform these exchanges and at different locations so the child may understand that such an exchange is made with a variety of communicative partners at various locations. Once the child is able to successfully go to his communication book, pick up the picture card, walk over to his communicative partner and hand her the card to receive the desired object, the child is ready to move on to phase three of PECS (BBB Autism Support Network, 2010).

Phase three of PECS is more challenging than phase one or two because it necessitates the child's discrimination between pictures. In phase three, the communicative partner will prepare the child's communication book with two or more picture cards. The number of picture cards that should be in the communication book at this time will vary from child to child depending on how well he/she is able to discriminate between pictures. If, for example, the child does not often discriminate pictures, the communicative partner should only put two different picture cues in the child's communication book at this time. Once the preparation is completed, the communicative partner will sit across from the child and ask "What do you want?" The child will then reach for one of the picture cards and place it in the communicative partner's hand, who will then reiterate the action and provide the child with the object that was requested. If the child is initially unable to discriminate the picture cards from each other, he will eventually learn to discriminate the picture cards based on the object he receives as a result of exchanging each picture. To progress the child through this phase, the communicative partner should add more picture cards to the communication book as the child successfully exchanges pictures for objects. Once the child is able to search through his communication book, discriminate the picture cards, and request a variety of objects, he is prepared to move onto phase four of the picture exchange system (BBB Autism Support Network, 2010).

Phase four capitalizes on the child's ability to discriminate picture cards by introducing a sentence strip. To prepare for this phase, the child must be given a new picture card with the words "I want" on it. Typically, these words may be depicted in picture form of the American Sign Language physical gesture of two hands with curved fingers spread out and palms facing the body. A sentence strip with Velcro also must be created, which should be long enough to fit two picture cards next to each other. The communicative partner will introduce the sentence strip with the "I want" card to the far left of the strip. Once the student chooses a picture card, the physical prompter may assist the child in putting his chosen card next to the "I want" card if necessary.

The physical prompter should help the child then hand the entire sentence strip to the communicative partner. The communicative partner will then reiterate the action but this time, she will read the sentence strip aloud with space between each word. As the child seems more comfortable using the “I want” card, the communicative partner may remove the card from the sentence strip into the child’s communication book and prompt him to put it onto the sentence strip with another picture. Once the child has mastered the ability to spontaneously choose the “I want” and utilize it to request a desired item, he is ready to move onto phase five of the augmented communication system (Wallin, 2010).

Phase five of PECS is a simple extension of vocabulary within the child’s communication book. The phase capitalizes on the mastered skill of phase four by having the child request an object using the “I want” card by incorporating adjectives. To prepare to teach the child this phase, the communicative partner should create new picture cards of numbers, colors, or descriptive words. It is important for the communicative partner to first introduce these cards to the child before expecting him to spontaneously request objects using these adjectives. Once the child has learned these new adjective cards using the procedure in phase one, these new descriptive words can help refine the child’s requests. Once the child is able to refine his requests for objects spontaneously, he is able to move onto the sixth and final stage of PECS (Wallin, 2010).

The sixth and final phase of PECS enables a student to comment on his environment. In order to begin the phase, the child must have new picture cards such as “I smell,” “I hear,” and “I feel.” It is important for the communicative partner to allow opportunities for the student to comment spontaneously using these new cards. The communicative partner might say “I feel happy. How do you feel?” Since the child has proven mastery within the former phases of PECS, the child should understand that a correct response should come in the form of a picture card. These questions that the communicative partner asks should be in the form of social questions, while the questions in phases 1-5 consisted of communication for reinforcers or desired objects. Ultimately, this phase will be mastered when the child is able to adequately express his social views with the use of appropriate picture cards on his sentence strip and spontaneously hand it to the communicative partner (BBB Autism Support Network, 2010).

While many students with ASD are successfully able to progress through each of the phases of PECS, such an evolution from start to finish may take years to accomplish. It is important to understand that students at any phase in the picture exchange system are able to communicate and express their needs and desires. While each of the six phases of PECS contains specific goals to be mastered, many professionals have implemented strategies or techniques within each of these six phases. Michael Grupp (2009), a speech and language pathologist (SLP) at the Groden Center in Providence, Rhode Island, implements his own technique within phase four of PECS. After a child spontaneously requests an object using the “I want” card and the desired object on a sentence strip, he has trained the communicative partner to take the child’s index finger and have the child touch each picture card as they read the child’s request aloud. If the child is not looking at the cards or pulls his hand away from the communicative partner’s, the communicative partner is to take the child’s index finger again and read the entire sentence over. Only after the communicative partner reads the sentence strip aloud with the child’s finger touching each picture card is the child provided the desired object. Another technique that Grupp has employed for one particular student using the PECS system is the utilization of a red “STOP” card with a picture of a hand. Before the child is given a desired food item that he successfully requested, the child

must wait as the communicative partner counts for five seconds in her head before given a few bite sized pieces of that food item. It is important to note that this “STOP” card is larger than the rest of the child’s picture cards, is stored in the pocket of his communication book binder, and is only used during snack-time and lunchtime (Grupp, 2009). The SLP designed this technique to compliment the PECS system in an effort to have the child eat his food much slower.

Professionals may use their creative minds to implement techniques that build on or incorporate the skills mastered within PECS.

PECS has proved to be a successful augmented communication for many students who have ASD. In one study, researchers tested students with intellectual disabilities and visual impairments in reading comprehension after a researcher read a book aloud while asking questions and providing the students with physical objects applicable to the story. Compared to baseline data, the two students tested both experienced a large increase as to the number of comprehension questions they were able to answer correctly after they were exposed to the objects during the intervention. Researchers believe that “by attaching the object to the page, the student gained understanding that the page of the book itself contained the information. The student then used the same object as a means to communicate understanding of a comprehension picture” (Mims, Diane, Baker, Lee, & Spooner, 2009). As proved in the study, by providing students with a visual and physical representation of an object, students are able to better comprehend knowledge. The picture exchange system capitalizes on this fact and provides students with a physical and visual representational model in which they can gather information from.

In another study, students who were deaf, hearing impaired or intellectually disabled were able to improve their rate of success in following instructions when they used a picture dictionary compared to following written directions alone. In fact, four of the seven students who participated in the study rated the helpfulness of the picture/word dictionary as a four or a five, with five being the most helpful. “The results of this study indicate that picture dictionaries can be successfully used to promote expressive communication of students with deafness and intellectual impairments” (Allgood, Allgood, Heller, Easterbrooks, & Fredrick, 2009). Therefore, the research confirms that the notion of picture-based communication that PECS is centered around is beneficial to students with ASD or other disabilities because it enables them to understand what they are asked to do and allows them to successfully follow directions.

Finally, much information about the effectiveness of PECS was discovered in the study entitled “The Effect of Teaching PECS to a Child with Autism With Verbal Behavior, Play, and Social Functioning” by Anderson, Jurgens, and Moore (2009). Researchers found that as a result of using PECS, one case study student increased his initiation of verbal behavior, play, and social functioning over the five years that he was trained in the communication system. At the beginning of the study the focus child was able to verbalize 14 words. Yet by the conclusion of the study, the same child was able to verbalize 77 words. As for the effective acquisition of PECS, researchers believe that:

The use of highly preferred, individually motivating items, the teaching of self-initiated communication, the highly structured training format, and the use of concrete visual representations, may be more easily understood by children with autism than systems that use abstract manual signs (Anderson, Jurgens, & Moore, 2009)

With scientific research supporting its effectiveness, it appears that many students with ASD have encountered success with the picture exchange communication system.

While PECS may be the solution to many students' communication problems, it may not be as suitable for others. One drawback of the picture communication system is vocabulary: students are limited to using the vocabulary that is in their communication book. Amy Rice (2010), a supervisor of three special education teachers at the Groden Center in Providence, Rhode Island, reiterates this notion: "The system [PECS] can be a little bulky. A student could bring the book out to the playground but would probably have to leave it on the picnic table if they wanted to play on the equipment and need both hands. Also if it is left behind somewhere the child does not have their words with them to express themselves." Another disadvantage of PECS is that communication is limited. If a student does not have a specific card for a specific object, they are unable to request that object using the PECS system (Kluth, 2003). Rice (2010) further explained that sometimes, students may become distracted by the Velcro or pictures and the communication book becomes a toy to them. In her experiences she has seen many students try to eat the picture cards. In addition to discussing the disadvantages of PECS for students with autism, the system is difficult for people who have limited mobility. "PECS requires fine motor skills, as an individual needs to pick up a picture and grasp it. Students with other disabilities such as Cerebral Palsy would have a much more difficult time with PECS" (Rice, 2010).

Research has also proven that the PECS system should not be the sole augmented communication system that families of a child with special needs should consider. When pressed to make such an important decision, parents should be aware of the potential negative effects of PECS or any other augmented communication system. A study that analyzed and compared a control group to an experimental group that was trained with PECS found that "in the groups receiving PECS training/consultation there were significant post-treatment increases in the rate of their initiations and rate of PECS use in the classroom. However, the positive effects were not maintained once classroom consultations ceased" (Howlin, Gordon, Pasco, Wade, & Charman, 2007). Another disadvantage of using the PECS system is that it requires a child to be able to discriminate and interpret pictures. While there exists a large population of students who find interpreting pictures to be *easier* than reading basic language, there is also a large number of individuals who cannot adequately associate representational model pictures with realistic objects. For those students who are blind or visually impaired and also have communication difficulties, the PECS system is inappropriate without adaptation. Therefore, while PECS may be the best communication option for one child with ASD, the belief that PECS is simply the most suitable option should not be extended to all students with ASD with communication impairments.

For parents of students with ASD who feel that their child may not be the best candidate for the PECS system, there still remains a variety of alternative communication methods. Perhaps the most popular alternative to PECS is American Sign Language (ASL). ASL is ideal for students who are deaf or have a hearing impairment, as no verbal prompting is necessary as in the picture exchange system. Many families believe that ASL is preferable to PECS because it allows for more fluid and natural communication. Yet ASL also necessitates the communicative partner's understanding of signs in ASL. According to Amy Rice (2010), the Groden Center prefers PECS for a few reasons. One of them is because of the fact that anybody can understand what the picture means when it is handed to them. "In order for a child to build the vocabulary in ASL that

they have with PECS it would require that staff also know all of their signs. While that is not too difficult when the child has 10-20 signs, it becomes much more difficult when their vocabulary increases” (Rice, 2010). The possibility of a family’s choosing for their child to learn ASL exists largely in their own knowledge of ASL or their willingness to learn it.

Furthermore, Facilitated Communication (FC) also exists as an alternative way of communication for students with ASD who have communication problems. Facilitated communication is a method whereby a person with autism is able to point to letters or type out letters on a keyboard or electronic device while the person with autism receives the support of the touch of another person or "facilitator" on wrist, elbow or shoulder. The elements of facilitated communication are: physical support; progressing from initial training to practice and finally to fluency; maintaining focus; emotional support; and fading physical support (Himelman, 2010). While FC is easy to understand and the vocabulary may be unlimited with the use of assistive technology, the disadvantages of the system may outweigh the advantages. With FC, an individual *always* requires a communication assistant, or someone who provides physical support to enable the individual to communicate. Because of this, there exists the possible influence of the communication assistant on the individual he is aiding. For example, if an individual is using a computer to type and his communication assistant, who is providing physical support believes that he knows what the individual is typing, he might consciously or subconsciously influence the individual’s typing through his physical assistance or his own beliefs of what the individual is about to communicate. In addition, the most efficient type of FC may also be the priciest: FC often utilizes equipment including expensive computers or other costly devices. Despite the drawbacks, many families of children with communication difficulties have found great success with facilitated communication.

Augmented and alternative communication systems exist to enable individuals with disabilities to express themselves. PECS is one of many communication systems that allows students to request specific items and upon completion of all six phases, comment on the world around them. With support and accolade from both professionals and researchers, many individuals with ASD encounter great success with PECS. Yet a variety of other communication systems such as ASL and FC also exist as alternatives to verbal communication. In order to successfully implement any alternative communication system, it is critical for professionals, parents, and peers to be knowledgeable of the utilization of the system and to adequately assess which system is suitable for each individualized child. Through the successful implementation of PECS, students with ASD or other communication disabilities have the ability to communicate with their peers and experience the fullest life possible.

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