



Parent-Centered Intervention in the Time of the Pandemic: Meeting the Complex Communication Needs of a Bilingual Preschooler

The COVID-19 pandemic forced educational practitioners, students (PreK–12), and families to adjust to synchronous and asynchronous online instruction. This study followed an online intervention involving a Spanish-English preschool special education teacher, a Spanish-speaking parent, and her bilingual preschool child with complex communication needs (CCN). Students with CCN frequently require an augmentative and alternative communication (AAC) system to compensate for severe developmental language disorders. Over a six-week period, the parent and teacher collectively introduced the preschooler to a low-technology AAC option: a picture exchange communication system in English and Spanish. Overall, the parent developed an increased understanding of her child’s communicative intent and reported high levels of satisfaction with utilizing AAC to meet her child’s bilingual language needs. Even though the pandemic caused many learning challenges, this single-subject study highlights the effectiveness of a parent-centered and culturally relevant instructional approach for a bilingual preschooler with CCN.

Keywords: online learning, parent-centered practices, complex communication needs, Spanish-English bilingual, augmentative and alternative communication

The COVID-19 pandemic forced educational practitioners, students (Pre-K–12), and families to adjust to synchronous and asynchronous online instruction. This study followed an online intervention involving a Spanish-English preschool special education teacher, a Spanish-speaking parent, and her bilingual preschool child with complex communication needs (CCN).

Students with CCN frequently require an augmentative and alternative communication (AAC) system to compensate for severe developmental language disorders (DLD). Over a six-week period, the parent and teacher collectively introduced the preschooler to a low-technology AAC option: a picture exchange communication system (PECS) in English and Spanish. Overall, the parent developed an increased understanding of her child’s communicative intent and reported high levels of satisfaction with utilizing AAC to meet her child’s bilingual language needs. Even though the pandemic caused many

learning challenges, this single-subject study highlights the effectiveness of a parent-centered and culturally relevant instructional approach for a bilingual preschooler with CCN.

Global school closures resulting from the COVID-19 pandemic have had tremendous repercussions for millions of students and their families (Azoulay, 2020; Gullo, 2022). Undoubtedly, the pandemic forced teachers and administrators to reimagine educational practices. Although online teaching methods existed prior to COVID-19, most educators and students were unaccustomed to the sudden and exclusive implementation of synchronous and asynchronous hybrid learning platforms (International Association for K–12 Online Learning [iNACOL], 2011).

Recent research indicates that students with disabilities were at a heightened risk for many of the educational and socio-emotional challenges that surfaced during the pandemic (Petretto et al., 2020; Toquero, 2020). Furthermore, students with more significant disabilities encountered additional struggles when instructive learning and clinical interventions via in-person, face-to-face interactions were reduced to interactions through a computer screen (Porter et al., 2021). When young children are unable to use natural verbal speech, they face many obstacles resulting from this inability to convey their basic needs, wants, and emotions to their families, teachers, and peers (Ogletree et al., 2018; Wofford et al., 2021). Specifically, children with CCN due to significant limitations in their linguistic, perceptual, motoric, or cognitive systems experience additional challenges (Thomas-Stonell et al., 2016).

The use of a different communication modality, such as AAC systems, can assist a child with CCN with communicating. However, Soto and Yu (2014) found that AAC devices used in schools often may not be linguistically or culturally relevant to the home environment. Additionally, many parents do not receive appropriate training in how to use AAC devices at home with their child (Soto & Cooper, 2021).

This study investigates how a teacher and parent implemented a six-week AAC online intervention with a Spanish-English bilingual preschool child who presents with CCN. The primary goal of the intervention was to increase functional communication skills using a PECS that was parent-centered and linguistically and culturally relevant.

Background

In California, 22.3% of school-age children are classified as dual language learners (DLL) yet 60% of children under the age of five speak a language other than English (Uro & Lai, 2019). Accordingly, and in alignment with national early education organizations, the California Assembly Blue Ribbon Commission (BRC) on Early Childhood Education recently established a long-term comprehensive vision plan with detailed learning outcomes focused on family-centered practices that are culturally and linguistically relevant (Classen & Westbrook, 2020; Garrity & Catlett, 2022; Mengstie, 2022; Rivera et al., 2022).

Key recommendations specific to children with disabilities focus on specialized training for early childhood inclusion teachers who prioritize strong parental involvement and expand comprehensive culturally relevant support to meet the screening, assessment, and strategic instructional needs of children with disabilities (Perry et al., 2020).

Alternative and Augmentative Communication

For decades, federal laws such as Section 504 of the Rehabilitation Act (1973), Title II of the Americans with Disabilities Act (1990), and the Individuals with Disabilities Education Improvement Act (2004) sought to guarantee that every student with special education eligibility has the right to accessible

communication in schools. Additionally, classrooms today are more diverse culturally and linguistically than they previously were. Thus, AAC has become increasingly important.

Picture Exchange Communication System

Students who enter schools with unique CCN require specialized supportive instruction.

AAC is a form of assistive technology that uses both unaided and aided communication forms for individuals with CCN (Bean et al., 2019). PECS allows users to exchange picture symbols and printed text with a communication partner and functions as a low-technology AAC option that promotes communication for individuals with CCN (Frost & Bondy, 2002; Ganz & Simpson, 2004). The system uses basic behavioral principles and techniques to shape and encourage communication exchanges when verbal expression is limited (for further information, refer to <https://pecsusa.com/pecs/>).

Exchanging black-and-white or color picture cards helps students learn to communicate with others and express basic needs, wants, and interests (Hourcade et al., 2004; O'Neill et al., 2020) (refer to Appendix A for specific PECS symbols). Due to the ease of implementation, PECS is widely implemented by educational practitioners as well as children and their families. Numerous studies demonstrate that parents who receive training can, in a relatively short period of time, implement PECS with fidelity and achieve positive communication outcomes (Frost & Bondy, 2002; Mengstie, 2022; Starble et al., 2005).

Although PECS is both effective and easy to implement, many parents are unfamiliar with this system or the array of other available devices needed to support aided language development for children who require AAC (Ronski et al., 2015; Starble et al., 2005). For these reasons, parents of children who use AAC need to be provided with support in accessing and implementing AAC for their children (Ogletree et al., 2018; O'Neill et al., 2020; Park et al., 2011).

Family-Centered Education Practice

Bronfenbrenner's Ecological Systems Theory

Language and learning are deeply embedded in culture (Bodrova & Leong, 2019; Lantolf et al., 2020). When an emerging bilingual child develops and acquires the skills necessary to listen, speak, and communicate in two languages, family ties and community bonds are formed (Kulkarni & Parmar, 2017). These connections strengthen and support linguistic development and cultural connectedness, not only in school but throughout the extended community.

The ecological systems theory model (Bronfenbrenner, 1979) acknowledges that child development does not occur in isolation. Instead, it is influenced by a complex and interrelated network of experiences across settings that involve the family, home, school, community, and greater society at large. Key components of the ecological systems model include a child-centered approach to learning and the identification of the family home environment as the most important setting for a child. Collectively, the combination of these two elements serves as *engines of development* (Bronfenbrenner, 1979). The application of the ecological systems model to bilingual learners with CCN who rely on AAC for communicative purposes highlights the vital role the child-parent dyad plays in children's learning (Marshall & Goldbart, 2008; McNamara, 2018).

Parent-Centered Intervention in the Use of AAC

Parent-centered training for children with CCN should emphasize collaboration between families and school personnel to determine priority communicative contexts, AAC device implementation, and communicative partner training (Alder, 2017; Harrison-Harris, 2002; King et al., 2021). Thus, collaborative

partnerships between school personnel and family members not only ensure parental involvement but fosters a more effective AAC intervention plan. However, central to an effective partnership is the ability of educators to understand the home dynamics specific to each family and the ability of stakeholders to collectively identify intervention strategies (McNamara, 2018). Moreover, these partnerships are most effective when parents are valued as collaborative team members alongside the teacher and child (Starble et al., 2005; Wofford & Hoge, 2012).

However, at times, professionals may not fully understand the perspectives of the families of children who require AAC (Marshall & Goldbart, 2008). Soto & Yu (2014) suggested that outcomes using an AAC are most successful when there is parental support and commitment to implementation. To increase the involvement of diverse families, educational practitioners should design communication systems that are reflective of the family's linguistic practices, which also include cultural values. Of utmost importance is the need to model the use of AAC in relevant communicative contexts to increase the child's affiliation with the family and community (Soto & Yu, 2014). After all, the ultimate purpose of AAC intervention is to help children maximize their social, communicative, and academic potential as well as fulfill occupational or vocational goals within their communities (Tönsing & Soto, 2020).

Parents play a significant role in their children's academic development. As such, collaboration and mutual trust should be central in the parent-educational practitioner relationship. Supporting parents in the ability to provide quality interactions at home and in the community assists children in their development of effective communication and academic achievement (Alder, 2017). Based on their extensive investigation, King et al. (2021) discovered that early intervention and access to AAC services for families and children best supports linguistic and cognitive development along with functional communication skills. Therefore, partnerships with parents must begin at the onset of instructional interventions (Kulkarni & Parmar, 2017).

Bilingual Users of AAC

Children who are exposed to two languages benefit from a dual language approach to academic instruction and clinical intervention (Bird et al., 2016; King et al., 2021; Martínez-Álvarez, 2019). Despite a significant increase in research related to bilingual children with communication disorders, little attention has focused on bilingual children who use AAC. Soto and Yu (2014) found that children benefit from intervention approaches that integrate their home languages and cultures. Furthermore, bilingual children with CCN demonstrated measurable gains in overall language development when AAC systems integrated both linguistic and culturally relevant needs (Harrison-Harris, 2002).

Pandemic and Online Learning

The COVID-19 pandemic exacerbated existing educational inequities (Azoulay, 2020; Gullo, 2022). The extant digital divide disproportionately impacted culturally, linguistically, and economically diverse students when educational instruction was moved to a virtual format (Petretto et al., 2020; Porter et al., 2021). However, when implemented successfully, online instructional collaborations between general and special education teachers can provide meaningful instructional options and strategic alternatives that meet the unique needs of students with special education (Ianes & Venturoso, 2021; Toquero, 2020).

From the pandemic, numerous studies that address the outcomes of instructional practices and strategic interventions specific to the needs of school-age children with special educational needs have surfaced (Gullo, 2022; Porter et al., 2021). Many research studies report that students with disabilities, when compared to their typically developing peers, faced more challenges while learning in a virtual format. For example, one study examined students with intellectual and developmental disabilities and

their perspectives on educator support during online instruction during the pandemic (Navas et al., 2021). The researchers found that less than half of the participants were able to follow online educational formats. Of the respondents, 60% said family members instead of teachers provided instructional support during this time.

Another study evaluated the practice of electronic-inclusion or *e-inclusion* to note how teachers incorporated innovative learning applications to encourage student learning (lanes & Venturoso, 2021). E-inclusion embraces digital platforms and interactive technologies to support students with special needs in reaching their learning potential. In this study, general and special education teachers completed a survey based on e-inclusion learning strategies. The findings highlight the importance of active communication between families and educators. The results show how over 60% of teachers developed highly individualized materials for special education students. They aimed to create interactive and cooperative learning opportunities via different applications, audio messages, and multimedia instruction with companion online tutorials.

For the study this article describes, the teacher and parent collaborated to develop and implement an online intervention. This intervention was supplemented with a low-technology AAC. The technology was used over a six-week period for a child with CCNs. The research questions were:

1. How does an online AAC intervention affect communication between a child and parent?
2. How does parental involvement in the use of AAC impact the daily life of a child with CCNs?

Methods

Research Design

This study employed a mixed method single-subject design to understand the effects of an online parent-centered intervention using a PECS as a low-technology AAC option. For this study, results are based on multiple closed- and open-ended questions from four different surveys completed by the parent participant pre- and post-intervention. The parent was invited to participate in this study by her child's local preschool teacher. Both parent and child signed mandated consent forms as provided by the participating university's Institutional Review Board. All surveys and questionnaires were sent via email.

Participants

Student Participant

The student participant was a four-year, two-month-old female Spanish-English bilingual preschool student who resided with her predominantly Spanish-speaking mother and grandmother in a large urban city in California. At the time of the study, she was enrolled in an inclusive Preschool for all Learners (PALS) classroom designed for children with a wide range of special education eligibility and ability levels. PALS classrooms are staffed with an early childhood special education teacher along with special education assistants.

The child in this study maintained a special education eligibility of Speech-Language Impairment (SLI) and receives weekly sixty-minute sessions for each of the following designated instructional services: Language and Speech (LAS), Occupational Therapy (OT), and Adaptive Physical Education (APE). The bilingual student participant presented with significant expressive language delays in Spanish and English, demonstrated limited ability to initiate or participate in conversations, and primarily used word approximations as well as gestures to indicate basic needs, wants, and interests.

Parent Participant

The parent participant was a 38-year-old Spanish-speaker native to the country of El Salvador who lived in the United States for over a decade. The parent completed her primary education in her country of origin. At the time of the study, she was an employed single-parent who was raising her child at home with her Spanish-monolingual mother.

Materials

Child Information and Background Questionnaire

The parent reviewed a pre-intervention child information flow chart to determine if her child was a good candidate for an AAC intervention (refer to PECS Flow Chart, 2021). The parent also provided comprehensive case history information reporting on her daughter's developmental, medical, and educational background.

Pre- and Post-Intervention Surveys

Two surveys were each administered twice, pre-intervention and post-intervention. These surveys were adapted and modified (in Spanish) based on previous studies that targeted monolingual English-speaking parents who completed AAC trainings (see Alder, 2017; Bean et al., 2019). The first survey aimed to assess the parent's understanding and experience with AAC (see Table 1). The second survey invited the parent to share her expectations and subsequent experiences specific to the online instructional training (see Table 2). Each survey took approximately 20 minutes to complete and contained a seven-point Likert scale questionnaire and open-ended questions.

PECS Binder

The teacher mailed the intervention materials via the United States Postal Service to the parent one week before the start of the online training. She gave specific instructions to leave the package unopened until the first day of the scheduled intervention.

The materials included a Spanish-English bilingual PECS binder with a laminated bilingual core word board that included laminated cloze sentence strips with Velcro in *Spanish* and English: "*Yo quiero ___/ I want ___.*" The binder contained multiple broad semantic category items, including food, clothing, colors, farm animals, school supplies, zoo animals, home objects, the classroom rules, health issues, places, body parts, and occupations (refer to pecsusa.com for extended details).

The teacher and parent had access to the exact same materials during the online intervention. Further support for vocabulary development was provided through the gradual addition of PECS pictures as determined by both the parent and the teacher.

Intervention

Due to pandemic related school closures, all meetings occurred in the Zoom video-conferencing format containing audio, visual, and collaborative features. After the parent completed the flow chart and case history questionnaire, the teacher and parent met via Zoom to collectively identify the communicative areas of need and develop the intervention plan. During the first week, the parent completed the pre-intervention surveys and baseline data was collected as the teacher introduced the use of the PECS binder to both the parent and child. In collaboration, the teacher and the parent created and designed the six-week AAC intervention.

Online Interactive Intervention

In this study, the parent, child, and teachers accessed Boom™ Learning, a free online platform that contains multiple interactive tasks in which students, teachers, and parents can simultaneously participate, create, and customize instructional materials in Spanish and English (refer to <https://info.boomlearning.com>). The parent and child completed four-picture sequence cards that contained tasks with multiple choice questions, interactive moveable pieces, and clickable answer choices.

To guarantee fidelity in the implementation of the intervention, the teacher consistently modeled the appropriate use of the PECS binder for the parent. To promote generalization in the use of AAC, the teacher also showed the parent how to make PECS accessible for her child throughout the day, outside of the intervention sessions. Each week, the teacher provided ongoing support to the parent by modeling the use of PECS and the interactive Boom Learning sessions. Additional time was allocated before and after each session to address parental concerns. Furthermore, the parent and teacher discussed the importance of integrating both Spanish and English languages during each session and when to introduce and add new vocabulary words.

Once a baseline was established, for the remaining five weeks of the intervention, the child completed five Boom learning card sequences (one for each day of the week) with the applied use of PECS binder. Each training intervention presented over Zoom lasted approximately two hours. During the final week, the parent completed the post-intervention surveys and emailed the responses to the teacher.

Results

Child Background Information

The parent report revealed that the child presents with decreased muscle tone or hypotonia resulting in mobility and balancing issues. At times, she requires minimal assistance when walking, sitting, or standing. In terms of vision skills, she uses corrective lenses and a right-eye patch. For communicative functioning, she predominantly uses gestures such as pointing or staring, approximates the words “mom/mama” and “grandmother/abuela” in English and *Spanish*. She also counts to six, and she recognizes the letters of her name.

The parent reported that her child becomes frustrated with communication and will walk away from others who do not understand her limited verbal requests or comments. Based on outcomes from the AAC flow chart, the child evidenced the following: limited Spanish-English vocabulary, inconsistencies in the ability to initiate communication, and minimal functional communication skills such that familiar and unfamiliar listeners had difficulty understanding her. Based on this information, the child qualified as a viable PECS candidate.

Pre- and Post-Survey: Parental Experience With and Knowledge of AAC

The nine questions for the survey that considered the parent’s experience and views of AAC contained a seven-point Likert scale: “7” strongly disagree, “6” disagree, “5” somewhat disagree, “4” neither agree nor disagree, “3” somewhat agree, “2” agree, “1” strongly agree (see Table 1). Figure 1 shows the compilation of the pre- and post-survey results regarding the parent’s experience with and knowledge of AAC. The blue bar shows the parent’s views at baseline while the red bar represents the parent’s position post-intervention. Additionally, the parent answered four open-ended questions on her perspectives about the strengths and challenges her daughter faced specific to her communication skills (see Table 2).

Table 1

Survey of Parent’s Experiences With and Views on the Implementation of AAC Method

-
1. I have utilized an Alternative and Augmentative Communication (AAC) system.
 2. I have used a Picture Communication Exchange System (PECS) with my child.
 3. I feel comfortable utilizing an AAC device with my child.
 4. My child can request basic items or feelings that she needs.
 5. My child can request basic items that she wants.
 6. My child answers questions that I ask her.
 7. My child can maintain an age-appropriate conversation.
 8. I am satisfied with my child’s ability to communicate.
 9. The use of an AAC method will impact my child’s ability to communicate.
-

Figure 1

Parental Experience With and View on the Implementation of AAC Method, Pre- and Post-Intervention

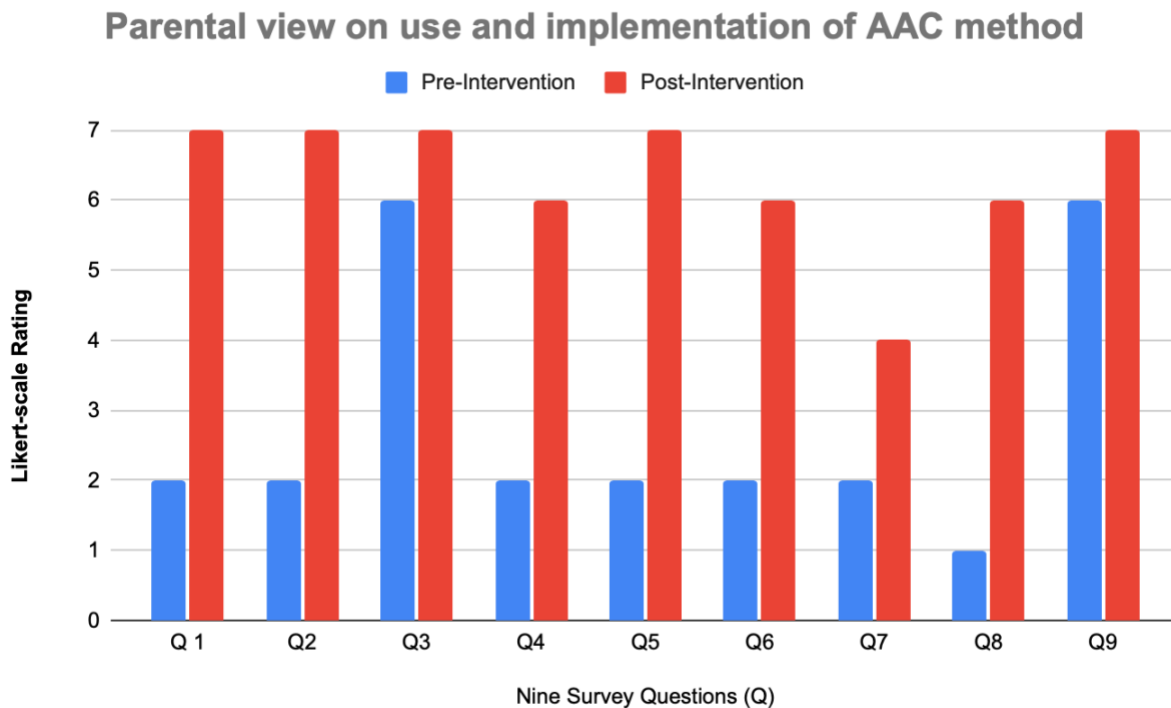


Table 2

Open-Ended Questions Based on Parent’s Concerns, Pre- and Post-Intervention

-
1. What are your current concerns for your child?
Pre-Intervention I find it very hard to understand my child. I feel frustrated that I cannot help her. She will try to point or show me but sometimes I still cannot understand her. Then she gets upset but continues to try.
Post-Intervention At the beginning, it was frustrating that I was unable to understand my child. Now with the PECS binder, she knows to go to the binder and points to a picture. Then I will say the name and she will repeat it. I feel less frustrated. My concern now is for her to combine words into phrases.

2. What are your child's strengths?	
<i>Pre-Intervention</i>	She understands and listens to me. She doesn't give up.
<i>Post-Intervention</i>	She says, "No," and "Yes" when I offer her something. Before she would just stare at me. Now, she responds, "Yes I want it," or "No I don't want it." Now she goes to her binder, points to a picture if she sees that I do not understand her. She has a second option to communicate.

3. What would you like your child to achieve in terms of communications skills?	
<i>Pre-Intervention</i>	I want her to be able to use 3-4-word sentences and to be understood.
<i>Post-Intervention</i>	Now that she has a second alternative for communication, I want to have conversations with her. She can start a sentence by herself, saying "I want ____" without using her sentence strip. She will enter Kinder and I want for her to use longer and more complete sentences.

4. What are your child's challenges in terms of language and communication?	
<i>Pre-Intervention</i>	Sometimes my mom who speaks only Spanish has a hard time understanding her. Sometimes we do not know if she is speaking English or Spanish. So, my mom will get frustrated with her and will give her something she does not want. Then my daughter gets upset.
<i>Post-Intervention</i>	When she talks to less familiar people, she gets shy and will not answer. She is shy to initiate a conversation with others. I worry when she starts Kinder that she will be shy and might not make friends.

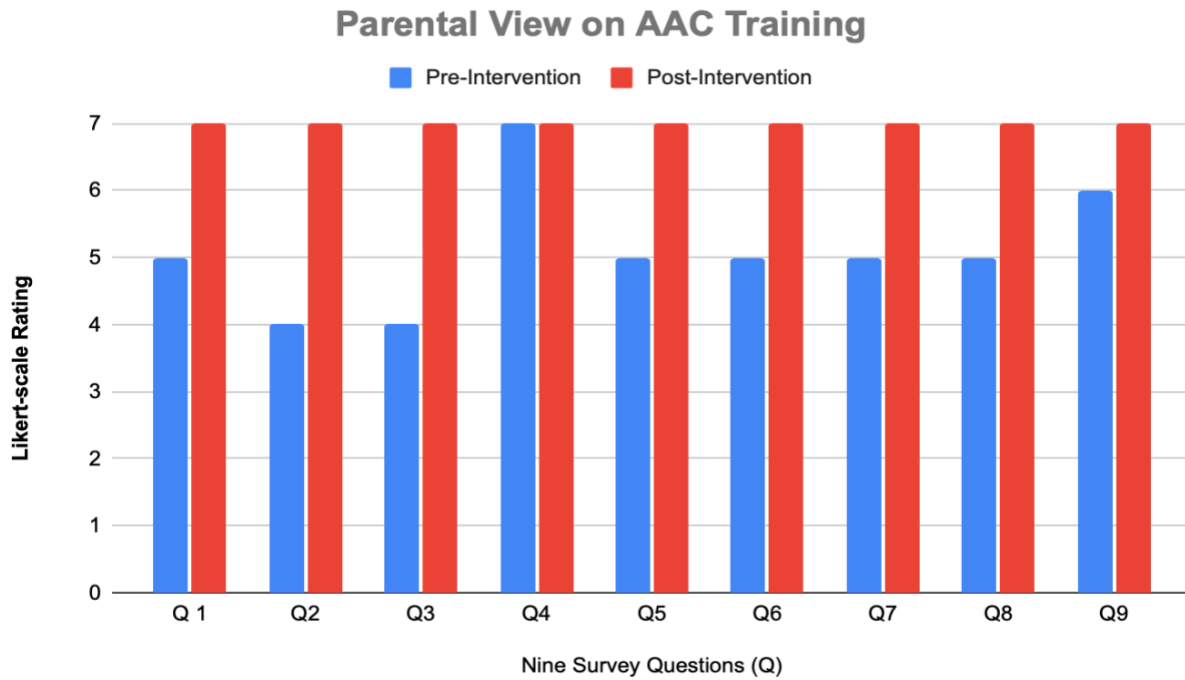
Pre- and Post-Survey: Understanding and Implementation of an AAC Intervention

While Table 3 shows the actual survey questions, Figure 2 displays the pre- and post-survey results from the parent's views specific to the effectiveness of the AAC system training sessions. The nine questions for this survey included the same seven-point Likert-scale found in the previous survey: "7" strongly disagree, "6" disagree, "5" somewhat disagree, "4" neither agree nor disagree, "3" somewhat agree, "2" agree, "1" strongly agree. The blue bar represents parent perceptions at baseline while the red bar represents post-intervention sentiment.

Table 3
Survey of Parental Views Specific to the AAC Training

-
1. This training will/answered all my questions about my child's communication.
 2. This training will fit/was sufficiently tailored to my family's needs.
 3. I hope to/felt comfortable during this training.
 4. This training will/increased my knowledge of the AAC device that my child will use.
 5. This training will/helped me communicate with my child using the AAC device.
 6. I will/feel satisfied with the AAC training that I have received.
 7. I might/would recommend this AAC training to other families with similar needs.
 8. I will/feel like the researchers really understood our family's needs.
 9. This training will/should help our family to better communicate with each other.
-

Figure 2
Parental View on AAC Training, Pre- and Post-Intervention



Discussion

The purpose of this study was to understand the impact of a parent-centered online intervention training with a parent and her bilingual child, who presents with complex communication needs (CCN).

Parental Views on AAC

Previous studies suggest parents find the process of learning to implement AAC systems stressful, time-consuming, and overwhelming (Romski et al., 2015; Soto & Yu, 2014). Prior to the intervention, the parent reported little-to-no experience in the use of AAC. Due to her child’s limited verbal output coupled with reliance on the use of gestures, the parent reported that she only understood about 50% of her daughter’s communication efforts.

Post-intervention responses suggest that the parent developed an increased appreciation of her child’s communicative intentions and high satisfaction levels with learning how to utilize an AAC system to meet her daughter’s unique communication needs. With an increase in knowledge in AAC, the parent stated that her child now has an alternative mode of communication to supplement her limited verbal expressive language skills. The post-training survey results indicate that her child gained an additional tool or alternative modality to communicate via PECS; thus, the parent was better able to understand her daughter—approximately 80% of the time in both languages. These results reinforce findings from previous studies which demonstrated an increase in parental understanding of their child’s verbal production following implementation of AAC systems (Soto & Cooper, 2021; Wofford & Hoge, 2021).

Culturally and Linguistically Relevant AAC Approach to Learning

Previous studies that focused on culturally and linguistically diverse families found that parents and other family members similarly indicated AAC systems were critical to their children’s social and academic

participation in school settings (Starble et al., 2005; Soto & Yu, 2014). In contrast, parents were unsuccessful when implementing an AAC method at home with their bilingual child due to the limitations of the AAC device along with language barriers between the family and educational practitioners (Marshall & Goldbart, 2008; McNamara, 2018). Other findings demonstrate that due to inexperience, families did not perceive a need to use AAC at home because such systems often appeared culturally insensitive (King et al., 2021; Wofford & Hoge, 2021). While previous studies suggest that AAC materials in languages other than English do exist (Töngsing & Soto, 2020), many parents reported less than positive experiences due to issues such as irrelevant vocabulary, mismatch in teachers' beliefs, and inadequate instructional training in how to effectively implement the AAC device at home (Soto & Cooper, 2021).

Despite this, results from this current study suggest that collaborative partnerships between parent and teacher can successfully foster the development of appropriate culturally and linguistically relevant instruction in the use of a low-technology AAC. The key is to coordinate and develop an efficient AAC system which integrates first and second language interactions within meaningful contexts and settings. Here the bilingual teacher identified appropriate culturally relevant linguistic information to match the family needs. The provision of home language or Spanish-language support for the parent and grandmother resulted in positive outcomes. For example, during the parent interview, the teacher asked, "What foods are important for you to have as PECS symbols for?" The mother shared her daughter's preferred food items such as *pupusas*/Salvadoran stuffed tortilla, *pan dulce*/sweet bread, and *plátanos*/plantains. In short, a bilingual PECS, developed in collaboration, enabled the child to navigate communication options in Spanish and English to meet her own communicative needs situated within contextual interactions with different people.

By and large, the parent reported high rates of satisfaction, noting how the intervention was both family-centered and culturally relevant. This result demonstrates that when parents are invited to collaborate with educational practitioners as equal partners, classroom instruction is extended into the home environment, thus creating a positive experience for both the child and the parent (Starble et al., 2005). As the parent progressively gained confidence in applying PECS at home, she and her daughter were able to generalize skills learned during the intervention sessions. During consultation sessions, the parent initially stated that she experienced feelings of helplessness and shame from her inability to understand and communicate with her child. However, following the intervention, the parent expressed high levels of satisfaction after learning an alternative method to interact and communicate with her daughter.

Throughout the intervention, the parent was given multiple opportunities to use PECS with appropriate support provided by the teacher, who gradually encouraged the parent to take the leading role. Based on observations throughout the course of the intervention, the teacher noted increased levels in the parent's confidence over time. For example, during the initial sessions of the training, the parent waited for the researcher to take the lead in presenting PECS symbols to the child. However, upon completion of the initial training sessions, the parent eagerly held two picture symbols on each hand and asked her daughter, "Which one do you want?"

Bridging the Communication Gap Between Parent and Child

Fundamental to a child's overall development is the establishment of an important bond known as the parent-child dyad (Bronfenbrenner, 1979). This study adds to existing literature demonstrating how a parent-focused intervention approach can produce effective results in a child's ability to learn an alternative and viable means to communication. Before this intervention, the child primarily communicated through gestures and relied upon partial word approximations with a significantly limited

repertoire of single words. Both the child and parent acquired an additional mode to communicate with the use of PECS that led to an increase in requesting and expanding communication options along with skill generalization (Bean et al., 2019; Ogletree et al., 2015). Additionally, this study demonstrates the positive benefits of implementing a bilingual intervention by incorporating home and school language. Overall, this study reinforces previous research findings demonstrating the positive outcomes associated with collaborative partnerships between families and school personnel.

Limitations of the Study

Due to the COVID-19 pandemic, the AAC intervention was conducted entirely online following approximately six hours of the child's virtual special education class instruction. At various times, the parent and/or child may have been experiencing screen fatigue. Technological issues such as disruptions of the home internet connection during training sessions resulting in interruptions to the delivery of the training occurred. Also, other family members were often present in the room where the intervention sessions took place, which may have caused distractions for participants. Therefore, some of the collected results may not have been an accurate reflection of the participants' abilities.

Finally, the sample size hinders generalizability of these findings. As only one child and one parent participated in this study, an opportunity to implement an intervention with additional bilingual or monolingual children with other special education eligibilities who present with CCN to determine if an online intervention is equally as successful would have been of interest. To this end, these authors encourage other researchers to replicate this study with participants who vary in age, ethnicity, gender, cultural heritage, and abilities.

Future Directions

The COVID-19 pandemic led to school closures, thus forcing educators, students, and families to move to instructional online learning formats. Much attention has been called to the negative aspects of the pandemic (Gullo, 2022). Yet, at the same time, encouraging outcomes are now surfacing. This study demonstrated how a parent-centered low-technology AAC intervention training can be successful with a parent and her bilingual preschool child who presents with CCN. The parent and the child not only learned how to use PECS to communicate more effectively with one another, but also the findings revealed how the participants' functional communication increased after the implementation of PECS.

Students with special educational needs and their families likely have not experienced a crisis like the global COVID-19 pandemic. However, many families have overcome numerous other obstacles to learning based on their children's disabilities. This study demonstrated the positive outcomes for student and parent alike, resulting from a meaningful parent-teacher collaboration during unprecedented adverse conditions.

Authors

Jesica Hercules, MA, is a Spanish-English bilingual special education teacher in a preschool special day class in the Los Angeles Unified School District. She completed her BA in Psychology from Long Beach State and her MA in Special Education from California State University, Dominguez Hills.

Kai Greene, PhD, CCC-SLP, is an assistant professor in the College of Education: Department of Special Education at California State University, Dominguez Hills. His research is focused on diagnostic assessment, clinical instruction, and applied intervention strategies for dual language learners with special educational needs.

M.C. Kate Esposito, PhD, is Professor and Department Chair in the College of Education: Department of Special Education at California State University, Dominguez Hills. She conducts and publishes research in the areas of teacher preparation, collaboration between general and special education teachers, and inclusive classroom practices.

References
















- Alder, E. C. (2017). *English and non-English-speaking families utilizing augmentative and alternative communication (AAC) at home* (Doctoral dissertation).
- Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990).
- Azoulay, A. (2020). Message from Ms. Audrey Azoulay, Director-General of UNESCO, on the occasion of the International Day of Persons with Disabilities, 3 December 2020. *UNESCO*.
- Bean, A., Cargill, L. P., & Lyle, S. (2019). Framework for selecting vocabulary for preliterate children who use augmentative and alternative communication. *American Journal of Speech-Language Pathology*, 28(3), 1000–1009. https://doi.org/10.1044/2019_AJSLP-18-0041
- Bird, E. K. R., Genesee, F., & Verhoeven, L. (2016). Bilingualism in children with developmental disorders: A narrative review. *Journal of Communication Disorders*, 63, 1–14. <https://doi.org/10.1016/j.jcomdis.2016.07.003>
- Bodrova, E., & Leong, D. J. (2019). Tools of the mind: the Vygotskian-based early childhood program. *Journal of Cognitive Education and Psychology*, 17(3), 223–237. <https://doi.org/10.1891/1945-8959.17.3.223>
- Boom Learning. (n.d.). *Boom cards*. <https://wow.boomlearning.com/>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Classen, A. I., & Westbrook, A. (2020). Professional credential program: impacting early childhood inclusive learning environments. *International Journal of Inclusive Education*, 26(7), 719–736. <https://doi.org/10.1080/13603116.2020.1717652>
- Flow chart-Is this person a candidate for PECS. (2020, November 10). Retrieved March 18, 2021, from <https://pecsusa.com/free-materials/>
- Frost, L., & Bondy, A. (2002). *The picture exchange communication system (PECS) training manual* (2nd ed.). Pyramid Publications.
- Garrity, S., & Catlett, C. (2022). Preparing equitable and inclusive early childhood educators. *Young Children*, 77(1), 8–16.
- Gullo, D. L. (2022). Supporting students with disabilities to be successful in an online learning environment. *Journal of Effective Teaching in Higher Education*, 5(2), 59–92. <https://doi.org/10.36021/jethe.v5i2.312>
- Harrison-Harris, O. L. (2002). AAC, literacy and bilingualism. *ASHA Leader*, 7(20), 4–17. <https://doi.org/10.1044/leader.FTR2.07202002.4>
- Hourcade, J., Pilotte, T. E., West, E., & Parette, P. (2004). A history of augmentative and alternative communication for individuals with severe and profound disabilities. *Focus on Autism and other developmental disabilities*, 19(4), 235–244. <https://doi.org/10.1177/10883576040190040501>
- lanes, D., & Venturoso, L. (2021). Learn by distance: advice for choosing an effective and inclusive e-Learning platform. *IUL Research*, 2(3), 172–184. <https://doi.org/10.57568/iulres.v2i3.135>
- Individuals with Disabilities Education Improvement Act of 2004, Pub. L. No. 108-146 H.R.1350 (2004). <https://www.congress.gov/bill/108th-congress/house-bill/1350>
- International Association for K–12 Online Learning [iNACOL], 2011.
- King, M. R., Ronski, M., & Sevcik, R. A. (2021). Language differentiation using augmentative and alternative communication: An investigation of Spanish–English bilingual children with and

- without language impairments. *American Journal of Speech-Language Pathology*, 30(1), 89–104. https://doi.org/10.1044/2020_AJSLP-20-00030
- Kulkarni, S. S., & Parmar, J. (2017). Culturally and linguistically diverse student and family perspectives of AAC. *Augmentative and Alternative Communication*, 33(3), 170–180. <https://doi.org/10.1080/07434618.2017.1346706>
- Lantolf, J. P., Poehner, M. E., & Thorne, S. L. (2020). Sociocultural theory and L2 development. In *Theories in second language acquisition* (pp. 223–247). Routledge.
- Marshall J., & Goldbart J. (2008). Research report: “Communication is everything I think.” Parenting a child who needs augmentative and alternative communication (AAC). *International Journal of Language & Communication Disorders*, 43(1), 77–98. <https://doi.org/10.1080/13682820701267444>
- Martínez-Álvarez, P. (2019). Dis/ability labels and emergent bilingual children: Current research and new possibilities to grow as bilingual and biliterate learners. *Race Ethnicity and Education*, 22(2), 174–193. <https://doi.org/10.1080/13613324.2018.1538120>
- Mengstie, M. M. (2022). Preschool teachers’ beliefs and practices of developmentally appropriate practice (DAP). *Journal of Early Childhood Research*, 21(2), 121–132. <https://doi.org/10.1177/1476718X221145464>
- McNamara, E. (2018). Bilingualism, augmentative and alternative communication, and equity: Making a case for people with complex communication needs. *Perspectives of the ASHA Special Interest Groups*, 3(12), 138–145. <https://doi.org/10.1044/persp3.SIG12.138>
- Navas, P., Amor, A. M., Crespo, M., Wolowiec, Z., & Verdugo, M. Á. (2021). Supports for people with intellectual and developmental disabilities during the COVID-19 pandemic from their own perspective. *Research in Developmental Disabilities*, 108, 103813. <https://doi.org/10.1016/j.ridd.2020.103813>
- Ogletree, B., McMurry, S., Schmidt, M., & Evans, K. (2018). The changing world of augmentative and alternative communication (AAC): Examining three realities faced by today's AAC provider. *Perspectives of the ASHA special interest groups*, 3(12), 113–122. <https://doi.org/10.1044/persp3.SIG12.113>
- O'Neill, T., & Wilkinson, K. M. (2020). Preliminary investigation of the perspectives of parents of children with cerebral palsy on the supports, challenges, and realities of integrating augmentative and alternative communication into everyday life. *American Journal of Speech-Language Pathology*, 29(1), 238–254. https://doi.org/10.1044/2019_AJSLP-19-00103
- Park, J. H., Alber-Morgan, S. R., & Cannella-Malone, H. (2011). Effects of mother-implemented Picture Exchange Communication System (PECS) training on independent communicative behaviors of young children with Autism Spectrum disorders. *Topics in early childhood special education*, 31(1), 37–47. <https://doi.org/10.1177/0271121410393750>
- Perry, M., Myung, J., & Hough, H. J. (2020). What’s next for California schools? A progress report one year after “Getting down to facts II”. *Policy Analysis for California Education (PACE)* (2020).
- Petretto, D. R., Masala, I., & Masala, C. (2020). Special educational needs, distance learning, inclusion and COVID-19. *Education Sciences*, 10(6), 154. <https://doi.org/10.3390/educsci10060154>
- Porter, S. G., Greene, K., & Esposito, M. C. K. (2021). Access and inclusion of students with disabilities in virtual learning environments: Implications for post-pandemic teaching. *International Journal of Multicultural Education*, 23(3), 43–61. <https://doi.org/10.18251/ijme.v23i3.3011>
- Section 504 of the Rehabilitation Act of 1973, 34 C.F.R. Part 104.4 (1973).
- Rivera, C. J., Haughney, K. L., Clark, K. A., & Werunga, R. (2022). Culturally responsive planning, instruction, and reflection for young children with significant disabilities. *Young Exceptional Children*, 25(2), 74–87. <https://doi.org/10.1177/1096250620951>

- Romski, M., Sevcik, R. A, Barton-Hulsey, A., & Whitmore, A. S. (2015). Early intervention and AAC: What a difference 30 years makes. *Augmentative and Alternative Communication, 31*(3), 181–202. <https://doi.org/10.3109/07434618.2015.1064163>
- Starble, A., Hutchins, T., Favro, M. A., Prelock, P., & Bitner, B. (2005). Family-centered intervention and satisfaction with AAC device training. *Communication Disorders Quarterly, 27*(1), 47–54. <https://doi.org/10.1177/15257401050270010501>
- Soto, G., & Cooper, B. (2021). An early Spanish vocabulary for children who use AAC: Developmental and linguistic considerations. *Augmentative and Alternative Communication, 37*(1), 64–74. <https://doi.org/10.1080/07434618.2021.1881822>
- Soto, G., & Yu, B. (2014). Considerations for the provision of services to bilingual children who use augmentative and alternative communication. *Augmentative & Alternative Communication, 30*(1), 83–92. <https://doi.org/10.3109/07434618.2013.878751>
- Thomas-Stonell, N., Robertson, B., Oddson, B., & Rosenbaum, P. (2016). Communicative participation changes in pre-school children receiving augmentative and alternative communication intervention. *International Journal of Speech-Language Pathology, 18*(1), 32–40. <https://doi.org/10.3109/17549507.2015.1060530>
- Tönsing, K. M., & Soto, G. (2020). Multilingualism and augmentative and alternative communication: Examining language ideology and resulting practices. *Augmentative and Alternative Communication, 36*(3), 190–201. <https://doi.org/10.1080/07434618.2020.1811761>
- Toquero, C. M. D. (2020). Inclusion of people with disabilities amid COVID-19: Laws, interventions, recommendations. *Multidisciplinary Journal of Educational Research, 10*(2), 158–177. <https://doi.org/10.17583/remie.2020.5877>
- Uro, G., & Lai, D. (2019). English language learners in America’s great city schools: Demographics, achievement, and staffing. *Council of the Great City Schools*.
- Wofford, M. C., & Hoge, R. (2021). AAC and multiculturalism: Incorporating family perspectives for improved outcomes. In *Augmentative and Alternative Communication: Challenges and Solutions*, 339.

Appendix A

Samples of PECS Basic Vocabulary in Spanish and English

<p>Bathroom</p> 	<p>I want</p> 	<p>Chips</p> 	<p>Goldfish</p> 	<p>Juice</p> 
<p>Baño</p>	<p>Quiero</p>	<p>Papas Fritas</p>	<p>Goldfish</p>	<p>Jugo</p>
<p>Hot Dogs</p> 	<p>Banana</p> 	<p>Popcorn</p> 	<p>Ball</p> 	<p>Ball Popper</p> 
<p>Pancho</p>	<p>Plátano</p>	<p>Palomitas de maíz</p>	<p>Pelota</p>	<p>Juete de Bola</p>
<p>I want</p> 	<p>Drink</p> 	<p>Help</p> 	<p>All Done</p> 	<p>Paint</p> 
<p>Quiero</p>	<p>Bebida</p>	<p>Ayuda</p>	<p>Todo Listo</p>	<p>Pintar</p>