

The Outcomes of Professional Development on AAC Use in Preschool Classrooms

A Qualitative Investigation

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The purpose of this qualitative study was to describe early childhood special education service providers' perceptions of the use of alternative and augmentative communication (AAC) in their preschool classrooms as a result of participation in MELD (Multimodal Early Language Development) AAC professional development. MELD is a multicounty project that provides professional development to support service providers to meet the needs of preschool children with complex communication needs. Results indicate, in general, that the service providers felt the professional development met their individual needs to be successful in embedding the use of AAC in each of their preschool special education classrooms. The study extends past research about the components needed in effective early childhood professional development that results in teacher implementation of new instructional strategies to include the use of AAC strategies and adds new information about the context that may be needed. That context includes a positive and supportive relationship between coaches and service providers and a recognition of positive changes in the behavior of children by service providers. Implications for providing professional development and for future research are discussed. **Key words:** *alternative and augmentative communication, professional development*

DEVELOPING EFFECTIVE COMMUNICATION SKILLS is essential to a child's overall development. By addressing communication skills in the early childhood (EC) years, service providers can positively impact later learning, as children's oral language skills in preschool are associated with literacy achievement in early elementary grades (Diamond, Justice, Siegler, & Snyder, 2013). Furthermore, preschool children who exhibit challenging behavior, often resulting from the inability to communicate effectively, are at an

increased risk for academic failure (Brennan, Shaw, Dishion, & Wilson, 2012).

For early childhood special education (ECSE) service providers, the ability to meet the needs of young children with communication delays and differences is critical, as the largest number of 3- to 5-year-old children receiving services under the Individuals with Disabilities Education Act (IDEA) are in categories related to communication: 43.7% language impairments, 37% developmental delay, and 8.9% autism (U.S. Department of Education, 2016). For those children who do not develop functional communication, alternative and augmentative communication (AAC) may help them learn to communicate. Two systematic reviews of data-based studies (Branson & Demchak, 2009; Romski, Sevcik, Barton-Hulsey, & Whitmore, 2015) and a meta-analysis (Dunst, Trivette, Hamby, & Simkus, 2013) documented that the use of

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AAC by infants, toddlers, and preschoolers with developmental disabilities is associated with improvements in communication behavior. This research suggests that AAC may be an option to facilitate the development of communication skills of young children.

For ECSE service providers to use AAC effectively, they should be educated on how to use the system and how to provide systematic instruction on the use of AAC (Lane & Brown, 2016). Service providers can receive such education through preservice preparation or in-service professional development (PD). Despite the importance of this education, research in the 1990s documented that no special education (SE), occupational therapy, or speech-language pathology preservice program provided adequate coursework in AAC (Kanny & Anson, 1998; Kanny, Anson, & Smith, 1991; Koul & Lloyd, 1994; Ratcliff & Beukelman, 1995). More recent studies (Costigan & Light, 2010; Ratcliff, Koul, & Lloyd, 2008) have concluded that, although there was an increase over the years in the amount of AAC preparation provided in preservice programs across disciplines, it remains inadequate.

This lack of preservice preparation often leaves training in AAC to school systems in the form of in-service PD. Such PD is critical to close the gap between research and practice to improve outcomes for young children with complex communication needs (Lane & Brown, 2016). Early childhood PD research suggests that PD focused on supporting teachers' implementation of new instructional practices should be cohesive, focused on a specific practice, implemented collaboratively, grounded in practice, and linked to desired outcomes (Snyder, McLaughlin, & Denny, 2011). Effective PD is particularly critical in relation to AAC, as teachers' use of assistive technology (AT) is influenced, in part, by appropriate training and support (Dunst & Trivette, 2011; Ronski et al., 2015). Professional development on the use of AAC may, in fact, require the use of strategies that specifically focus on barriers to teacher use of AAC. These barriers include the time required to plan for the use of AAC in classroom activ-

ities, to collaborate with all team members, to match child needs with the appropriate AAC system, and to manage AAC equipment breakdown, repair, and maintenance (Copley & Zviani, 2004).

One program that has provided PD focused on AAC is MELD (Multimodal Early Language Development). MELD is a multicounty PD project designed to ensure that ECSE professionals have the knowledge and skills to be effective teachers of children with complex communication needs. MELD provides PD in the form of workshops and coaching for teachers, speech-language pathologists (SLPs), and paraprofessionals. MELD resources are obtained through a variety of agencies involved in the delivery of services to preschool children with disabilities and/or developmental needs.

STUDY PURPOSE

Little research focused on ECSE service providers' perceptions of the outcomes of PD such as that provided by MELD to facilitate the use of AAC in preschool classrooms has been conducted. Understanding service providers' perceptions may be crucial in identifying supports and resources needed to assist ECSE teachers to utilize AAC in their classrooms to maximize child outcomes. Therefore, the purpose of this qualitative study was to understand service providers' perceptions of the use of MELD AAC in their classrooms as a result of MELD AAC PD. Qualitative methodology was selected because it is an approach to research that can contribute to our knowledge of issues in educational practice by taking into consideration contextual factors and the perceptions of people implementing practices that may contribute to the sustained use of evidence-based practices (Hudson et al., 2016; Kozleski, 2017).

METHODS

Participants

Purposive sampling (Patton, 1990) was used to identify participants. As such, the seven rural Southern public school districts

involved in MELD were invited to participate in the study. Of the seven, four districts (denoted as B, J, L, and W) agreed, resulting in 63% participation ($N = 17$) of the 27 teachers, SLPs, and paraprofessionals implementing MELD. The decision to participate was made at the school district level. The two districts that chose not to participate did not want to impose additional work on their teachers, and the third district never responded to requests to conduct research in its district. After the MELD coordinator obtained informed consent from service providers, they were contacted by one of the authors to schedule interviews.

Seventeen SE teachers, paraprofessionals, and SLPs providing services to 3- to 5-year-old children with Individual Education Plans participated. All participants were Caucasian and female, ranging in age from 32 to 63 years. Site B included one teacher, one paraprofessional, and one SLP, all with at least a bachelor's degree and each with more than 10 years' experience teaching. Site J included one teacher with a bachelor's degree and two SLPs with a master's degree, with experience ranging from 1 to more than 10 years. Site L included two teachers, one with a bachelor's degree and the other with a Child Development Associate (CDA) degree; three paraprofessionals with a high school (HS) diploma or CDA degree; and one SLP with a master's degree. Experience for Site L participants ranged from 1 year to more than 10 years. Finally, Site W included one teacher with a master's degree, three paraprofessionals with an HS diploma or CDA degree, and one SLP with a master's degree. Experience for Site W ranged from 1 year to more than 10 years.

In addition, two MELD coaches participated. The first, a 58-year-old Caucasian woman with a PhD degree in SE and 35 years of experience, was employed through a discretionary grant project (IDEA 619 funds) at a 4-year public university as the associate director of a technical assistance project providing services to preschool SE programs. This coach also acted as the MELD coordinator. The other coach, a 49-year-old Caucasian woman with a PhD degree in SE and 27 years of experience,

was employed as a consultant at a regional educational service organization recognized in state statute.

MELD classrooms

Each classroom of participating teachers was part of a larger center, three of which were EC-only (Sites B, L, and W). The fourth site (Site J) was a combination prekindergarten/kindergarten self-contained classroom at a center school providing services to students with disabilities from 3 to 22 years of age. Teachers reported that children had a variety of disabilities including autism spectrum disorder, intellectual disability, orthopedic disability, and developmental delay. Class size ranged from six to 12 children. All classrooms were full-day programs.

MELD instruction was delivered in group shared reading, shared writing, and infusion activities based on The TELL ME Program (Zangari & Wise, 2017). Instruction centers around a small set of high-frequency words (i.e., core vocabulary) that children use throughout the day. MELD boards of various sizes are placed strategically in the classrooms and are used as visual supports as a form of AAC to teach core vocabulary. MELD boards typically include a large board for use during group activities and small individual MELD boards for use by individual children. In addition, iPads with Nova Chat software from Saltillo are used when appropriate.

Research design

Qualitative methodology was used to examine service providers' perceptions of the use of MELD AAC in their classrooms as a result of participation in MELD PD. The primary source of data was group interviews with the service providers. Interviews allow researchers to understand the participants' points of view (Peräkylä & Ruusuvuori, 2011). Group interviews were selected because they provide "a more natural environment than that of individual interview because participants are influencing and influenced by others—just as they are in real life" (Casey & Kueger, 2000, p. 11). Because the group interview participants

worked together, they shared a depth and breadth of experience, making it easier to generate a valid discussion (Patton, 1990).

To establish trustworthiness of findings through triangulation, additional data were obtained through interviews with coaches, videos of service providers engaged in MELD instructional activities, and document analysis. Observation allows researchers to observe environments in which the behavior occurs (Angrosino & Rosenberg, 2011). Although observation has traditionally been conducted face-to-face, digital forms of data can be valuable, as they allow for repeated observations, increasing the reliability of observations (Murthy, 2008). In addition, document analysis is often used as a method of triangulation, as documents provide an additional source of information (Merriam, 1988). Furthermore, dependability of data was established through code-recode strategies, intercoder reliability, and investigator triangulation; transferability through purposeful sampling; and credibility and confirmability through member checks (Anfara, Brown, & Mangione, 2002).

Procedures

MELD PD

The PD component of MELD includes a 2-day workshop held during the summer prior to fall implementation of MELD in classrooms, a 1-day mid-year workshop, and a 1-day spring workshop. Topics in the summer workshops include an overview of MELD, communication intervention strategies, and AAC systems. In the mid-year and spring workshops, service providers share their successes and challenges related to MELD and videotapes of their implementation of MELD.

On-site coaching begins within a month of implementation and continues on a schedule determined by the teachers and coaches but occurs no less than once a month. Visits from the coaches ranged in time depending on the needs of the MELD site but generally were approximately 2 hours each. Coaching strategies are based on the definition provided by Snyder et al. (2012) and involve helping ser-

vice providers implement AAC and other instructional strategies in the classrooms and provide technical support to solve problems and analyze outcomes. Coaching focuses on assisting the service providers to implement research-supported instructional strategies described in The TELL ME Program (Zangari & Wise, 2017). A typical coaching session might include the delivery of new children's books for the classroom, a demonstration of how to add words to a child's iPad app, modeling of how to use the large MELD board in a large group reading activity, and problem solving about how to help a child use his or her iPad in social interactions with peers. Service providers are in regular contact in between coaching sessions through phone conversations and e-mail.

Development of interviews

Questions for the group interviews conducted with service providers and the individual interviews conducted with coaches were developed collaboratively by the three authors, structured as open-ended probe questions to elicit participant engagement, and centered on the purpose of the study. Pre-determined prompts were used, allowing for further development of participants' thoughts and adding to the richness of the data (Creswell, 2012). To ensure valid information was obtained, the interviews were conducted using the guidelines provided by Brotherson (1994). That is, participant confidentiality was assured and interviews were scheduled at the participants' convenience and conducted at a private location. The authors began each interview with a question designed to engage the participants, that is, "Tell us about MELD," summarized points of agreement and disagreement, and avoided making statements that provided evidence of their own biases.

Group interviews with service providers

Interviews with service providers were conducted by the researchers at the sites and lasted 45 min to an hour. Because teachers, paraprofessionals, and SLPs participated in

MELD PD together and worked as a team, all service providers at each site were interviewed as one group except for Site L, where two interviews were conducted because job responsibilities did not allow all service providers to be interviewed together at that site. In Site L, one group consisted of one teacher, two paraprofessionals, and one SLP. The other group at Site L consisted of one teacher and one paraprofessional. In total, five group interviews were conducted. Group size ranged from two to five. Interviews were video recorded and transcribed.

Nine open-ended questions for service providers focused on their perceptions of MELD AAC PD, using MELD AAC strategies, and successes and challenges of implementing MELD AAC strategies. Examples of questions are as follows:

- How have you changed your teaching and classroom as a result of participating in MELD?
- What has been most helpful in helping you make these changes? Least helpful?

Interviews with coaches

The first author interviewed the coaches. One was interviewed in person and the other by telephone. Although the interview setting varied between the two coaches, telephone versus face-to-face interviewing does not yield different results (Oltmann, 2016). Interviews were recorded using Livescribe Echo Smart Pens and transcribed.

The coaches' interviews consisted of 11 open-ended questions focused on the role of the coach, outcomes of MELD AAC strategies, and challenges and successes of MELD. Examples of questions are as follows:

- What changes have you noticed teachers, SLPs, and paraprofessionals making in the classrooms as a result of MELD?
- What changes have you noticed in the children as a result of these changes?

Teacher-made videos

MELD teachers submit to the MELD coordinator videos of their implementation of MELD shared reading, shared writing, and in-

fusion activities throughout the school year. The first and last videos of the year from each of the participating teachers were a source of data for triangulation. The second author viewed the videos utilizing a "focused ethnography" approach (Knoblauch, 2005) while taking field notes. This approach is appropriate when observing well-defined types of activities, such as classroom instruction, and is often used in conjunction with interviews (Angrosino & Rosenberg, 2011).

Teacher self-assessment

In addition, the teachers completed a self-assessment, *Checking In ... How Am I Doing*, throughout the year. On this self-assessment, the teacher rates herself on a scale of "always," "sometimes," and "rarely" in relation to how frequently she uses MELD strategies. An example of a strategy is as follows: "Each student has an accessible way to say core words." The first and last reports of the year were used for data triangulation through document analysis.

Member checks

After themes were finalized by the research team, the themes (with a brief discussion of each) were sent via e-mail to teachers and coaches as a member check. They were asked to agree or disagree with each of the themes and provide an explanation for any disagreements. These data were used as a means to establish credibility.

Analysis

NVivo 11 was used to organize and manage data. Analysis began with the first author coding meaning units from the group interviews (479 meaning units) into one of four *a priori codes* of comments about (1) service providers (14 meaning units), (2) children (106 meaning units), (3) instructional strategies (125 meaning units), and (4) MELD activities (234 meaning units). A *meaning unit* was a phrase, sentence, or paragraph that contained ideas related to the purpose of the study (Graneheim & Ludman, 2004). The first and third authors discussed the coding

of meaning units into the *a priori codes*. Disagreements were discussed until consensus was reached.

The first author used procedures for inductive analysis (Charmaz, 2011) to analyze data from the interviews that had been coded into the *a priori codes*. This analysis resulted in seven themes. The three authors then met to discuss the themes and supporting quotes. Once the seven themes were agreed upon, the second and third authors conducted reliability checks for a randomly selected five codings of the meaning units for each theme. Agreement was 100%.

After the seven themes were agreed upon by all three authors, the coaches' interviews, the videos, and the documents were analyzed. The first author coded meaning units from the coaches' interviews into the themes. The second author coded her field notes from observing the videos into the themes. When coding coaches' interviews and field notes, the authors used a directed approach (Hsieh & Shannon, 2005), using the themes as key concepts/variables to use as initial coding categories in order to support the themes. The third author analyzed the document, *Checking In . . . How Am I Doing*, and coded the data into the seven themes. As recommended by Bowen (2009), the analysis was achieved through an initial superficial examination, then a thorough examination, and finally an interpretation of the information on the documents. No outliers in the analysis of coaches' interviews, videos, or documents were noted.

Three of the teachers and both coaches completed member checks. Because one coach and one teacher were not in full agreement with two themes, the first author reviewed the data coded into these themes and modified the themes slightly. The modifications were the addition of the issue of sustainability to Theme 6 and the coaches' perspective to Theme 7. The second and third authors agreed with the modifications.

RESULTS

Results are organized by the seven themes that emerged when analyzing data from the

group interviews. Data from coach interviews, observations of videos, and document analysis support the seven themes, establishing credibility and trustworthiness of the data through triangulation.

Theme 1: Helpful components of MELD AAC PD

During group interviews, service providers discussed the activities that occurred in the PD workshops. They talked about viewing videotapes of the implementation of MELD strategies, talking with other service providers, and learning about AAC, core vocabulary, MELD boards, and shared reading, shared writing, and infusion activities. One activity identified as being particularly useful was the opportunity to watch videos of the implementation of strategies, as this allowed the service providers to learn how to use the strategies with children in their own classrooms. As one teacher stated, "I needed to see the videos . . . to see it in action . . . how I could use it with my children." A second helpful training activity identified by service providers were the workshops where they could make materials to be used in their classroom. One teacher said, "I did like the two days of the 'make-and-take.' That was the most helpful probably."

In the group interviews, all service providers agreed that the coaches coming to their individual classrooms were extremely useful and critical. They reported feeling supported by the coaches and welcomed the opportunity to discuss MELD AAC with the coaches. They spoke of how the coaches demonstrated instructional techniques, got to know the children in their classrooms, and facilitated a teaming process in the classroom. They described the coaches as "very knowledgeable and very realistic," as exemplified by this teacher statement: "I felt a lot of pressure in the beginning . . . After [the coach] came in and said, 'Just use what you think works with your kids,' it helped me a lot to not be so overwhelmed."

Service providers also welcomed the coaches bringing materials when they came. One SLP stated, ". . . they also provided us

with the books when they came which was very helpful so we didn't have to get those on our own." Service providers from all four sites spoke positively of the opportunity to talk about their implementation of MELD strategies in their classrooms with the coaches. As explained by one teacher: "... and then we got to talk about it [during coaching]—what we liked and what we could have done better—if there was anything we could improve." Perceptions of the coaching are summarized by this quote by a paraprofessional:

They bent over backwards to help us. They were there all the time [coaching]. I mean if we ever needed anything, they would give it to us within a very short amount of time. We could not have asked for more support.

Both coaches reaffirmed the importance of coaching in their interviews, and one stated:

The teachers have to work it out in the classroom and figure out how to do it and how to keep it going. . . . So the training provides a foundation and the ongoing coaching keeps them invested . . . keeps them moving forward.

Theme 2: Changes in service providers' perception of confidence in using MELD AAC

Service providers talked in the group interviews about how, as they implemented the MELD AAC strategies over time, they became more confident. They spoke of the confusion when they first began and how the training and coaching helped them gain confidence. As one SLP said, "... you're going to mess up and you're going to think, 'I completely missed that entire part,' but you talk with [the coach] and the next day you do it again. That's ok because everybody makes mistakes." The following quote shows how attitudes changed over time: "I remember when I was first doing it—before we were able to see what was going to happen—it was like, 'Are you kidding me?' But it worked because I did it and I came to appreciate it."

Both coaches also noted increased confidence in the teachers, thereby triangulating

this theme. The following quote from a coach reflects this theme:

Sometimes they have a tendency to try something once at the beginning of the year and, if that doesn't work, they don't want to try it again. So . . . I might say, "Let's give it another try because these kids are very different than they were a few months ago." And then they keep moving forward and feeling better about it and it is exciting.

The increased confidence seemed to result in more inclusive classrooms. One coach stated,

In the beginning, I think they kind of ignored the kids with more significant disabilities because they don't know how to engage them. And when they have some way . . . to get the kids to participate in the [communicative] exchange, I think they are much more confident in how they interact with those kids and how they get them more engaged.

Teacher-reported gains in confidence were also triangulated by the *Checking In . . . How Am I Doing* teacher self-assessments. For example, on the item, "Books, props, & other materials are accessible," the teacher at Site 1 initially scored herself as "sometimes;" but by the end of the year, she scored the same item "always." Another item, "Language, in general, is elicited frequently from students," was initially scored by Site 4 as "sometimes" and Site 2 as "rarely." When completing the same item at the end of the year, both sites scored this item "always." Similar examples of self-scored gains were observed in six of the nine items on the documents.

Theme 3: Implementation of MELD AAC

Teachers, paraprofessionals, and SLPs in all group interviews described how they used the MELD boards and iPads, taught core vocabulary, and embedded the use of the AAC into shared reading, shared writing, and infusion activities. They also spoke of how they used the strategies throughout the school day. One teacher described how she accomplished this: "Throughout the day, in the lunchroom, in the playground. . . . Everywhere they go, they always have a MELD board or an iPad with them." And another teacher stated,

I have the board placed so that when they walk in the door, they can see the core words for the week. When I have time, I'll review them on the way in or out of the classroom. In morning circle, we start off saying good morning to everybody using our boards . . . And we review core words then. Sometimes I also review core words in the bathroom.

Service providers reported how they used various components of MELD to teach core vocabulary, visuals to promote communication, and songs to engage the students. The following quotes reflect these observations: (1) "We read one book for two weeks and we focused on core words [using the MELD boards] and we use those core words throughout the entire day"; (2) "I have a lot of visuals and cue cards around now. I definitely think that was an influence from [coach]"; and (3) "Yes, the songs that go with the curriculum' . . . I've used those with everything."

Field notes from video observations triangulate this theme. The use of AAC and visuals was seen in the videos from all four sites. For example, Sites 1 and 4 regularly used the large MELD boards during shared reading. Individual MELD boards and iPads also are consistently used by children in these two sites, and service providers at these sites were observed pointing to words on the large MELD boards while singing songs, teaching core vocabulary, and reading books. Children with individual MELD boards were encouraged to find the words either independently or with assistance from an adult. If children were non-responsive, service providers prompted them by saying, for example, "Can you say it on the board?" When children were able to locate the word(s), they often appeared excited saying, "I found the word!" Service providers were seen providing opportunities for multiple attempts for children to repeat the word(s) either chorally or independently and often expanded upon the children's utterances. For example, if the child pointed to and said the words "I" and "see," the service provider expanded saying, "I see a black cat looking at me." Sites 1 and 4 were also observed to include the iPads in group instruction, making

them available to individual children who appeared to need the Nova Chat to communicate. One child at Site 1 used the iPad to make complete sentences saying, "I saw a green duck," in response to the question, "What did you see?"

Interviews with coaches provide data to triangulate this theme that MELD strategies were being used in the classrooms. As stated by one coach, "One of the things you notice immediately when you go into the classrooms is there are lots and lots of visual supports, both around the communication boards and the visual schedule."

The *Checking In . . . How Am I Doing* self-assessment documents indicated that, at the beginning of the year, only three of the nine items that addressed aspects of implementing MELD AAC were consistently scored as "always" by all teachers. These items were "Core words are introduced or reviewed," "Each student has an accessible way to say core words," and "Appropriate visual tools are used: word cards, song poster, book, story toys, WHO and WHAT posters, story map posters." By the end of the year, six of the nine items were scored as "always" by each of the teachers. These responses support that MELD providers view themselves as able to implement MELD AAC strategies in their classrooms, triangulating this theme.

Theme 4: Individualization of MELD AAC

Not only did service providers report that they were able to implement MELD AAC strategies in their classrooms, but they also discussed how they were able to modify instructional activities, classroom schedules, and physical environments to meet their individual classroom needs. Teachers reported in the group interviews that they all had to find the space for the large MELD boards within the constraints of their classrooms, as well as determine how to make individual MELD boards and other AAC devices readily available to individual children. As explained by one teacher: "We emptied half the furniture out of our room because there's just not room . . ." Another teacher talked of how

she arranged the classroom to be able to use the large MELD board during group activities: “We do shared writing and shared reading at the table so that I’m able to stand up over here at this big board.” An SLP explained how she made individual MELD boards available to children: “We taped them on the table for those kids who need them and they have access to them every time we’re here for shared reading and writing.”

One coach spoke of supporting teachers in this process of individualizing:

We do have some really creative teachers who have done a really nice job figuring things out that work in their classroom and things that don’t. . . . I don’t feel teachers want to be robots, so it’s there for them to get an idea of where to get started. Then it’s totally up to them to take it and make it theirs.

Individualization was observed in the videos, providing evidence of triangulation of this theme. In relation to MELD boards, Site 4 had multiple sizes of MELD boards: a large board on the wall of the classroom, a smaller version the size of a student desk, and an individual board that children could hold. Several children were in adapted seating, and the size of the MELD board provided was appropriate to their individual needs. Site 1 instruction took place at a table, where a portion of the MELD board was taped to the table and used as a reference as needed.

Individualization of instruction was also observed in the videos. For example, when asked to respond to questions, various types of child responses were encouraged. At Site 3, when one child was looking for the word “have,” the service provider helped by saying, “It is green” (referring to the color coding of words on the MELD board). As further example, children were able to respond verbally, through pointing to the word on the MELD board or through a combination of pointing and verbalizations. A select few children with more complex communication needs used the iPad. In the videos, it was observed that service providers in Site 1 used the talk function on the iPad to help individual children communicate. Site 2 had children using dif-

ferent forms of AAC, depending on the developmental level of the children.

Additional triangulation for this theme of individualizing MELD strategies was found in the *Checking In . . . How Am I Doing* teacher self-assessments. One item of the checklist asked providers to respond to the statement, “Curriculum is individualized to meet the specific needs of each student.” At the beginning of MELD implementation, half of the providers responded “always” and the remaining providers indicated “sometimes.” When providers completed the self-assessment again at the end of the year, all providers indicated that the curriculum is “always” individualized to meet the specific needs of each child.

Theme 5: Increases in children’s skills from use of MELD AAC

Service providers at all four sites spoke of changes they observed in the communication abilities of children after MELD AAC implementation. They spoke of children’s enhanced abilities being used during structured instructional activities and during play. They noticed that the children used their increased ability to communicate when prompted, as well as spontaneously, with adults and peers. Service providers reported that children learned to put sentences together, ask for help, and engage in intentional communication. They described the changes as being “huge,” “beautiful,” “exciting,” and “amazing.” An SLP reported: “I just got the iPads two weeks ago, and I have a child who is everyday getting five or six new words.” Service providers were able to see progress in all children, including those with more significant communication needs. This finding is supported by this SLP quote in reference to a child:

You didn’t really see much communicative intent with another person. . . . We’ve seen that changing by using the technology Nova Chat™ and the iPad. We’re seeing him start to use it just to communicate for snack and free choice and things like that.

Service providers also noticed that, as children were better able to communicate, the

children's social behaviors were enhanced. One teacher explained, "Communication for one of the students last year was screaming, crying, and throwing a fit. Now he's using words. He made a sentence by himself the other day, 'I want play blue.'"

Service providers often mentioned how the children's increased ability to communicate helped them meet the children's needs, as exemplified by the following quotes: "He woke up from his nap and he was whiny and he took that board and he kept saying 'Want to eat.' So we gave him a snack, and he was fine," and "He will go up to our big board and point to 'help' . . . if he can go up there and tell me, 'I need help with books,' I can help him with books."

Both coaches acknowledged the growth in the children's ability to communicate, as well as the service providers' ability to support the communication development of children, providing evidence of triangulation of this theme. As one coach stated, "So I think that their expectations for the kids have changed. They are looking at them differently. They can see that, with good teaching, they can make positive changes in the children's development. It's huge—it keeps teachers motivated."

Videotapes also provide evidence that children used the AAC devices for communication. As data to triangulate this theme, one of the children at Site 4 on the video used the Nova Chat on the iPad to say "*want*," indicating that he wanted to get out of his adapted seat at the conclusion of group reading; a child at Site 1 used the iPad talk software to spontaneously initiate the sentence, "I am happy."

Theme 6: Challenges experienced with MELD AAC

Although service providers appreciated the resources provided by MELD, they recognized the time spent making materials was a challenge. For example, service providers at one site said that they did not have a color printer and that in order to print materials, they had to drive 30 min to the school district office. One teacher had this advice: "Do absolutely

everything you can do as far as prepping materials before the beginning of the year before you really get going. . . . Cuz it just gets so hard." And a paraprofessional lamented, "The story puppets—what are those? Who has time to make story puppets?"

However, service providers did not believe that the challenge of creating materials was related to the sustainability of the use of AAC. In support of this finding, one teacher completing the member check stated, "I think with the free resources and what we have, it is sustainable. More funding and resources year two would be great. But if that is not possible, then I think it will still be manageable." A coach agreed: "The initial investment in materials is huge . . . but after that, they have most of the materials . . . most of the work is done in that first year."

The challenge of providing materials so that families could be aware of the activities and utilize the AAC at home was recognized by service providers in the group interviews. They wished they had the time to make materials so that children could take books and AAC materials home. As one SLP stated, "I had plenty of cards and . . . boards [for the classroom], but the stuff . . . for the kids to take home . . . so their parents know what we're doing was not available." A teacher explained, "The biggest challenge is the take home activities . . . when do I have the time to print and create and make packets to take home?" Another teacher stated, "I need to create take home packets during the summer because I don't have time to do it during the school year."

Both coaches spoke of the importance of resources required to implement and sustain MELD. They spoke of resources necessary to conduct workshops (i.e., release time for service providers, travel, payment for workshop speakers, etc.) and mirrored service provider thoughts related to the materials. They also recognized that, although school districts were supportive of MELD, there was "a disconnect between the school district realizing what is needed to implement the program and the resources required to do this." For example:

We need the class to have access to iPads and the communication app We can't just have some old Junker 1 or 2—it has to be a decent thing to run the app But we try to use the resource labs or whatever, but they [the school districts] have a lot of old tech that they try to pawn off and so it's not helpful. They won't even run the app One of the districts just got two iPads last month and it's February, but at least they got them.

Theme 7: Improvements to MELD AAC

Service providers spoke of the need for MELD to be more flexible to meet the individual learning needs of children. They would have appreciated the opportunity to individualize the activities to be responsive to the varying cognitive abilities of children in their classrooms, thus allowing for even more individualization of the AAC. They spoke of needing more flexibility to conduct additional small group instruction that would allow for differentiated instruction. Although service providers recognized that the repetition was needed by some children to learn the core vocabulary, service providers spoke of some children being “bored,” with having to read the same book repeatedly: “Some of our kids need the repetition of the book; some of our kids are snoozing by the end.” Service providers also spoke of the need for additional books for children who did not need repetition to learn core vocabulary and/or additional books that provided more learning opportunities on the same vocabulary. This idea is expressed in the following quote:

It would be nice to have another [book] where there's more language and concepts within the stories because, in some of the stories, there's not a lot of language. They've [MELD] kept it simple to really target vocabulary . . . but some of our kids are here for two years.

One coach recognized this challenge but felt that teachers were encouraged to be flexible:

The kids who have the most significant disabilities need that repetition of reading it over and over I'm sure it gets boring to the adults. But it doesn't

have to be scripted We tell them this is here as a model, but you take it and make it your own. I think that is important.

DISCUSSION

The purpose of this qualitative study was to understand service providers' perceptions of the use of MELD AAC as a result of participation in MELD AAC PD. Qualitative methodology was selected, as this approach to research creates the opportunity to understand the context in which new practices are utilized. This understanding is critical for sustained use of new education practices in authentic settings (Kozleski, 2017). Results indicate that service providers perceived that MELD PD met their individual needs to successfully embed AAC in their preschool SE classrooms. The use of MELD AAC strategies required extensive revision to the curriculum, the approach to instruction, and the physical environments of classrooms. Service providers were able and willing to do this, reporting that, over time, coaching helped them become confident to implement and also individualize AAC in their classrooms. Helpful components of MELD PD identified by service providers to accomplish this included teaming, problem solving, and positive, responsive individualized support provided by the coaches while in the classrooms and during workshops. Positive changes in the behavior of children as result of AAC use in their classrooms were observed by the service providers.

The service providers' satisfaction with MELD PD and their perceived ability to implement MELD AAC may also be a result of the PD including practices that are supported by research. That is, there is growing evidence that PD supplemented with coaching is more effective in creating changes in EC settings than workshops alone, especially in relation to the adoption of new instructional practices (as reviewed in Diamond & Powell, 2016). MELD utilized a coaching approach that service providers perceived as being supportive and helpful. Furthermore, as suggested by

research, the PD was implemented collaboratively with service providers, based on the service providers' practice, and related to positive outcomes desired by the service providers (Snyder, Hemmeter, & McLaughlin, 2011). Using these PD practices helped establish a positive relationship between coaches and service providers, with this relationship being a part of the context that made the PD successful in helping teachers use new instructional practices.

Professional development with emphasis on how AAC can actually be used in the service providers' practice is critical. The sustained use of AT, including AAC, is associated with PD that provides adequate demonstration of the use of the devices, adequate opportunities to use the devices and receive feedback, and opportunities for self-evaluation of mastery (Dunst et al., 2013). MELD PD (workshops and coaching combined) provided opportunity for using and receiving feedback on the use of the AAC devices. The videos teachers made of their implementation of MELD AAC strategies that were shared in workshops, along with monthly completion of the self-evaluations, provided opportunity for evaluation of mastery. As reported by teachers and coaches and observed in the videos, the use of these three PD components helped service providers successfully use AAC in their classrooms.

In addition, inadequate on-site assistance that does not effectively provide support for devices not functioning, continued learning about different applications, and integration of the AT use into the daily classroom activity contributes to nonuse of AT, including AAC, in classrooms (Copley & Ziviani, 2004). However, service providers reported that MELD coaching provided adequate follow-up support on the use of the AAC, as well as support with integrating AAC into the daily preschool routine and individualization as needed.

MELD PD also positively influenced teachers' perceptions of their ability to successfully utilize MELD AAC strategies in their classrooms. This confidence in being able to impact student learning outcomes is often re-

ferred to as teacher self-efficacy (Gibson & Dembo, 1984; Protheroe, 2008). Teacher self-efficacy is associated with a wide range of teaching behaviors including (as related to this study) teacher use of recommended practices, willingness to implement new innovative teaching practices, and higher expectations for students (Hanline, Hatoum, & Riggie, 2012; Lee, Patterson, & Vega, 2011). Through their efforts in implementing, as well as individualizing MELD AAC, service providers observed that children's communication skills improve as a result of their instruction, increasing their teacher self-efficacy. This indicates that the service providers will most likely continue to use the MELD AAC strategies, as teachers with a strong sense of efficacy show a higher likelihood of sustained effort to produce positive outcomes for their students (Guskey, 1988; Stein & Wang, 1988).

The service providers spoke enthusiastically in all group interviews of the positive changes in children's communication and social behaviors. These positive changes observed by service providers may have provided the motivation for them to continue to implement AAC and work through challenges. Furthermore, the classrooms became more inclusive as service providers learned to support the development of children with more complex communication needs, recognizing that AAC was beneficial to all children. Service providers perceived changes in their practice as leading to change in children, suggesting the MELD AAC PD was successful.

Generalization of the results must be made with caution because of the limited number of participants in the study and the restricted geographic area of participants. Another limitation is that individual interviews might have yielded different results from those of the group interviews. In addition, not all service providers who participated in MELD participated in the study (a decision made at the school district level), possibly suggesting that the service providers who did participate in the study were an "exclusive" group. The MELD coordinator, however,

reported that there was no difference in engagement in implementing MELD AAC strategies between participating and nonparticipating sites. Furthermore, a causal relationship between MELD AAC strategies and service providers reported that changes in child development cannot be established.

However, the study extends past research about the components needed in effective EC PD that results in teacher implementation of new instructional strategies (including the use of AAC strategies) and adds new information about the context that may be needed. In addition to using effective PD strategies, a positive and supportive relationship between coaches and service providers and a recognition of positive changes in the behavior of children by service providers are critical components of the context that makes PD successful in helping service providers implement and continue to utilize new instructional strategies in educational settings.

Implications for professional development practices

The results of this study uncovered suggestions for improvement as well as challenges related to providing PD focused on supporting ECSE service providers as they embed AAC into the ongoing routines and activities of their preschool SE classrooms. First, the PD must be tailored to meet the individual needs of the service providers so that it produces outcomes that are meaningful to the service providers. This individual need might be in response to making alterations in the physical, social, or instructional classroom environment or in response to intervention needs of individual children in the classroom, as this issue specifically was discussed by service providers in this study as an area for needed improvement. Second, the person(s) providing the PD must be respectful of other responsibilities of service providers and allow changes to occur slowly over time as they make necessary adaptations in their classrooms and become con-

fidant using the AAC. Respecting the myriad of expectations of ECSE service providers also requires that the PD does not put unreasonable time or financial demands on service providers, particularly when it comes to creating materials and/or sustaining the resources needed, a challenge discussed by service providers in this study. Also a critical issue to be considered is the importance of providing resources to support service providers collaborating with families to ensure use of AAC devices and strategies in the home and community to maximize the child's learning opportunities. Third, coaches providing PD must have the skills and desire to establish a responsive, supportive, and positive relationship with service providers to address problems collaboratively so that service providers will feel motivated to continue to use AAC.

Implications for future research

This study highlights the positive outcomes of PD that includes a coaching component in relation to ECSE service providers' perceptions of utilizing AAC strategies in their SE preschool classrooms and subsequent changes in children's communication and social skills. Questions still remain regarding the specific elements of the PD that lead to sustained and long-term change as related to implementation of new instructional strategies, including AAC. Other researchers have suggested the need for additional studies to determine the active ingredients of PD interventions, including defining what coaching "is" as well as issues related to intensity and fidelity (Snyder et al., 2011). This knowledge is particularly critical in relation to AAC, as the number of young children with complex communication needs is great. In addition, technology changes quickly. Both PD and coaching, therefore, must ensure that service providers have the knowledge, skills, and resources to stay abreast of changes in the technology to optimize the learning outcomes of the children to whom they provide services.

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