A Survey of Augmentative and Alternative Communication (AAC) Services in Connecticut

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Abstract

The purpose of the investigation was twofold. First, it aimed to gather demographic information pertaining to students who require augmentative and alternative communication (AAC). Second, the survey sought to obtain information regarding service providers and their needs in terms professional development so they can support students requiring AAC to become contributing members of their families, peer groups, schools, and communities. To obtain this information, a survey was developed and then distributed to the special education directors in 166 districts in Connecticut. Results of the survey indicated that: a) the students had a wide range of disabilities and used a range of AAC systems, and b) the service providers identified a range of topics for professional development for the educational professionals. The findings indicate the pressing need for training professionals providing AAC services to students with complex communication needs (CCN).

Introduction and Literature Review

Communication pervades all aspects of education (Calculator, 2009) and all students need to be able to communicate efficiently and effectively to participate in educational activities. This includes students with developmental disabilities who may have complex communication needs (CCN) and may not be able to communicate via the traditional spoken and written means utilized in classrooms. To engage and participate in classroom activities and assessments including alternative assessments, students with disabilities need to be able to communicate. Some students with disabilities (e.g., those with autism, cerebral palsy, Down syndrome) may require augmentative and alternative communication (AAC) to benefit from educational instruction and to be a part of the school environment. AAC may include the use of manual signs, communication boards/books, high-tech electronic devices, and other forms of unaided and aided communication. Providing AAC services can sometimes be complex and overwhelming and has been identified as a pressing issue for educational professionals, who serve students with disabilities and their families (Foley, 2001). To ensure that students with CCN receive the services they require it is essential to understand the demographic profiles of children who require AAC (Binger & Light, 2006) and the training needs of service providers who will provide these services (CSPD, 2009).

Demographic information is needed to support funding as services for students with CCN may be costlier in terms of the support personnel and the need for AAC equipment (Binger & Light, 2006). Toward this end, a number of researchers have reported various types of demographic information

pertaining to individuals who use AAC (e.g., Matas, Mathy-Laikko, Beukelman, & Legresley, 1985; Burd, Hammes, Bronhoeft, &Fisher, 1988; Binger & Light, 2008). Mates and colleagues (Mates et al., 1985) reported that 3% to 6% of the special education population in the state of Washington could not use speech as a primary mode of communication. Burd and colleagues (Burd et al., 1988) found that in North Dakota 2% of students were "nonverbal". In a more recent study Binger and Light (2008) found that approximately 12% of preschoolers receiving special education services in Pennsylvania required AAC.

Providing AAC services to students typically falls within the realm of speech language pathologists (ASHA, 2005). Given the complexity of AAC intervention, its successful implementation will depend upon the interdisciplinary team and the skills and knowledge of the team members (Beukelman & Miranda, 2005; Bailey, Stoner, Parette & Angell, 2006). Members of the AAC multidisciplinary team include speech-language pathologists, physical therapists, occupational therapists, educators, and other professionals who should use evidence based practices to provide services (Sigafoos, Drasgow & Schlosser, 2003). Using evidence based practices necessitates a constant improvement of skills and knowledge which in turn requires in-service professional development. In service professional development is crucial in facilitating improved skills of professionals providing AAC services (Fallon & Katz, 2008). Soto, Muller, Hunt and Goetz (2001) report personnel preparation programs must include information so that AAC team members can engage in diverse educational settings. More recently a survey (Isakson & Merritt, 2007) of speech language pathologists in Connecticut reflected the need for training in assistive technology (AT) including AAC. Towards this end, it is necessary to make a distinction between AT and AAC as the two are not synonymous and AT services are broad and include AAC services. Isakson & Merritt, (2007) reported that AT including AAC was high on the professional development priorities and 76.8% of the participants reported a need in this area.

 Given that demographics play a significant role in funding and service delivery, and that AAC is included within AT yet has own its specific components, the purpose of this survey was to provide a) information on the demographics of children who need and/or use AAC and the types of AAC systems used in Connecticut, b) information on needs of service providers, in terms of professional development.

Method

To obtain information on the demographics of students who require AAC and training needs of service providers , surveys were distributed to the special education directors in all the 166 districts in Connecticut. Ensuring a high response rate is critical for any self-administered survey (Dillman, 2000).The current investigation had one major challenge to achieving a high response rate.   Self administered surveys are typically distributed to survey respondents (Dillman, 2000), but in the present investigation, the information for the surveys had to be collected through a different sources, such as school principals, speech language pathologists etc., then compiled before it was reported.

Survey Development

The survey was developed in a series of stages, as recommended by Dillman (2000). These stages included the following: developing an initial draft, securing feedback on the survey from an expert panel, and creating a final draft. The resulting survey had two sections: (a) an information page containing definitions, examples, and other instructions; and (b) demographic questions pertaining to students who required AAC and question pertaining to the training needs of professionals. The terminology used in the survey was consistent with the terminology used by the Connecticut Department of Education (CSDE), Bureau of Special Education (BSE).

Information Page: The first page of the survey consisted of an information page containing a definition of AAC, different types of AAC systems, examples of children who might require AAC, and other relevant information. This was done to ensure consistency across participants with respect to children using AAC across the school districts in Connecticut.

Demographic and Professional Development Needs Section: This section included questions pertaining to the following, with respect to students who required AAC: prevalence, sex, enrollment in educational services, disability classification, AAC system use, and the professional development needs of the service providers. The categories listed in the disability classification and special education service providers' sections were consistent with the most recent categories listed by BSE (CSDE) and IDEA. The identified categories for professional needs of the service providers was consistent with the areas of interest identified by American Speech and Hearing Association (ASHA, 2010) as needing professional and clinical attention.

Survey Distribution

The following steps were employed to distribute and collect they surveys: mailing the surveys to the special education directors, providing access to the survey online, and contacting the directors via email to remind them to return the surveys. Each mailing included the survey, a cover letter and a self-addressed stamped envelope for returning the surveys. Each survey had a unique identifiable code that consisted of alphabets and numerals. This was included in the survey to enable the researchers to identify the districts that returned the survey.

The mailings were sent to the special education directors in the 166 school districts in Connecticut. To ensure ease of participation the survey was also made available on line through survey monkey. Reminder emails were sent to the directors two months after the initial mailing of the survey. To obtain response from the districts information about the survey was also provided at a CSDE, BSE meeting where the special education directs were present. To encourage participants to respond to the survey a raffle was conducted and two talking photo albums were given out as prizes.
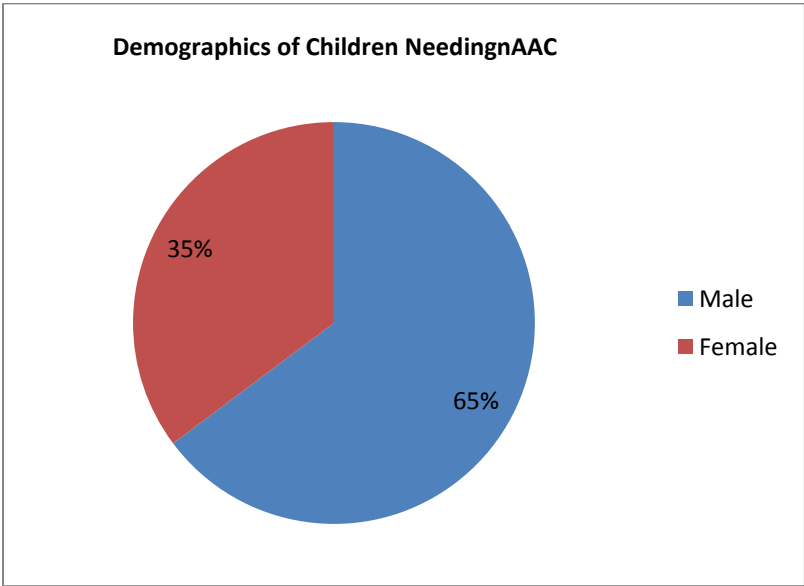
Results

Response Rate

54 of the 166 special education directors (32%) returned the survey. This response rate is typical of self administered survey rates in education and can be considered acceptable (Mertens & McLaughlin, 2004). A further analysis of the respondents indicated that responses were representative of Connecticut as responses were received from all the nine district reference groups (DRG) in the state (State Department of Education, Connecticut)

Demographics

Prevalence. A total of 917 students across grade levels from the 54 districts required AAC. The number of AAC users in the districts ranged from 0 to 209. Based on the 917 figure, the number of students requiring AAC comprised approximately 3% of students with special needs based upon district data in special education enrollment. These proportions were derived using the enrollment figures from the Connecticut Bureau of Special Education.
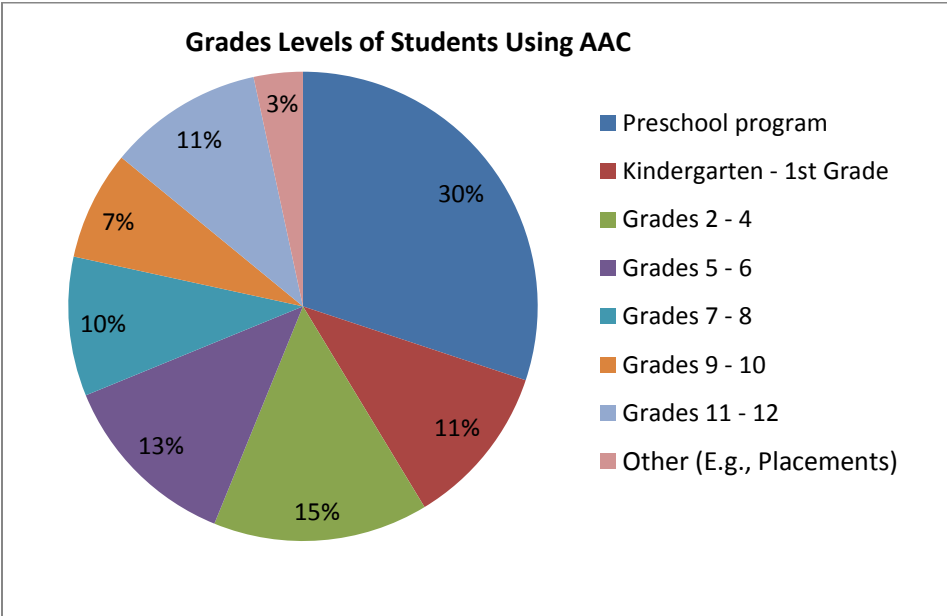
Sex. Approximately 65 % of students requiring AAC were male (i.e.,594/917) and 35% were female (i.e., 323/917) (Fig. 1)

Fig.1

Demographics of Children NeedingnAAC

Male: 65%
Female: 35%

Grade Level: Figure 2 contains the results regarding the grade levels of students requiring AAC. About a third of the students were reported to be in preschool programs. The other two categories with substantial number of students were grades 2-4 (15%) and grades 5 -6 (13%).

Fig. 2.

Grades Levels of Students Using AAC

- Preschool program: 30%
- Kindergarten - 1st Grade: 11%
- Grades 2 - 4: 15%
- Grades 5 - 6: 13%
- Grades 7 - 8: 10%
- Grades 9 - 10: 7%
- Grades 11 - 12: 11%
- Other (E.g., Placements): 3%

Primary disability. Figure 3 contains the results regarding the types of disabilities of children who required AAC. More than one third of the student had a primary diagnosis autism/pervasive developmental disorder (PDD). The two other categories with a substantial number of students were developmental delay (19%) and multiple disabilities (16%). In addition to primary disabilities, survey respondents were also asked to indicate if the children had cerebral palsy, hearing impairments, and/or visual impairments. Relatively few children had these types of secondary disabilities, with 7% or less in each category.

Fig. 3
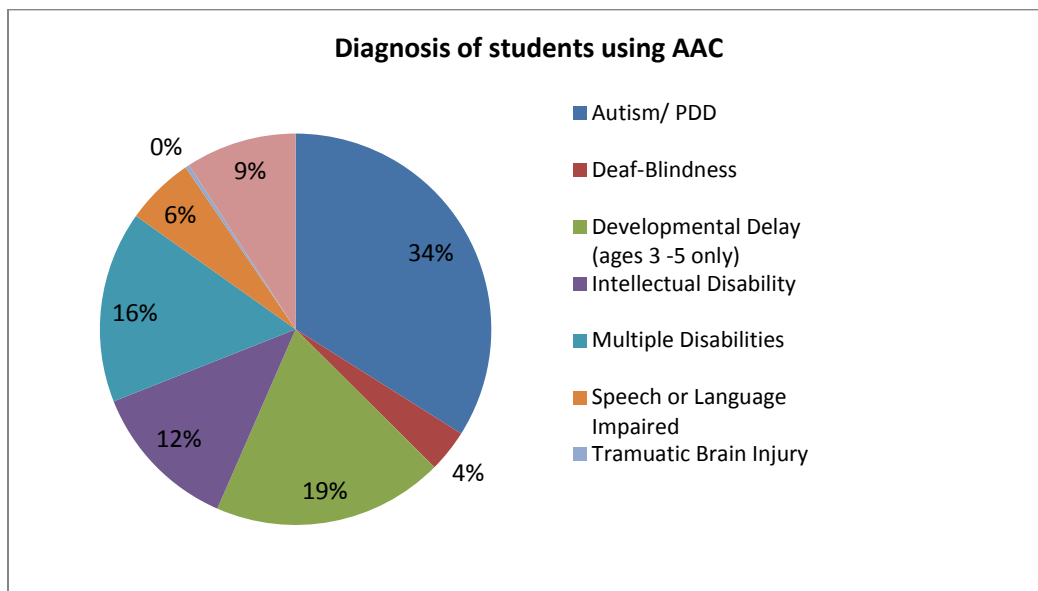
AAC Systems Used: Figure 4, provides information regarding the types of AAC systems used by students in Connecticut. The results indicate that picture systems and electronic (both low and high tech) followed by gestures and manual signs were used.

Fig. 4
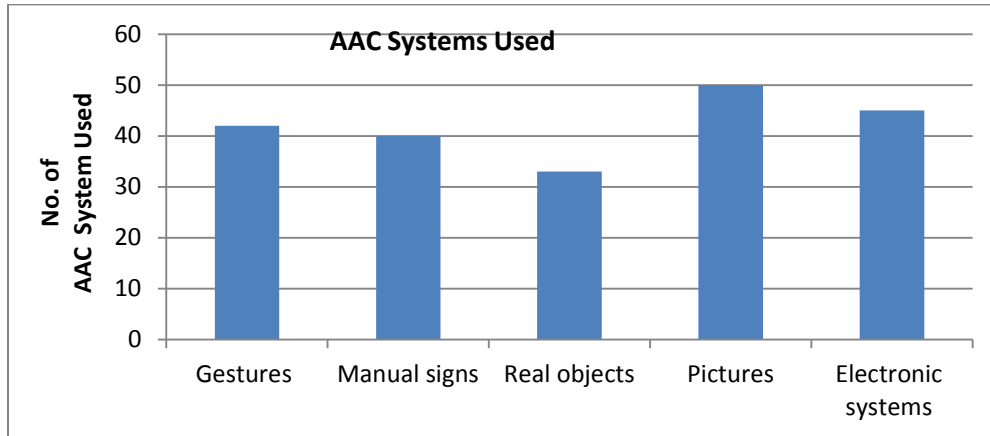
Low Tech AAC Systems Used: The students were reported to use a wide variety of low tech AAC systems. Fig 5 provides information on the low tech AAC systems used. The two low tech systems widely used were BigMac (n = 47) and GoTalk 4 + (n = 47) followed by Seven Step Communicator (n = 30) and Step-by-Step Communicator (n = 27). Some of the other simple digitized AAC systems reported were Cheaptalk, Dana, Alphsmart, Talkable 2, Talkable 3, Talkable 4, Hip Talk Plus, Go Talk 9, Go Talk 20.

Fig. 5
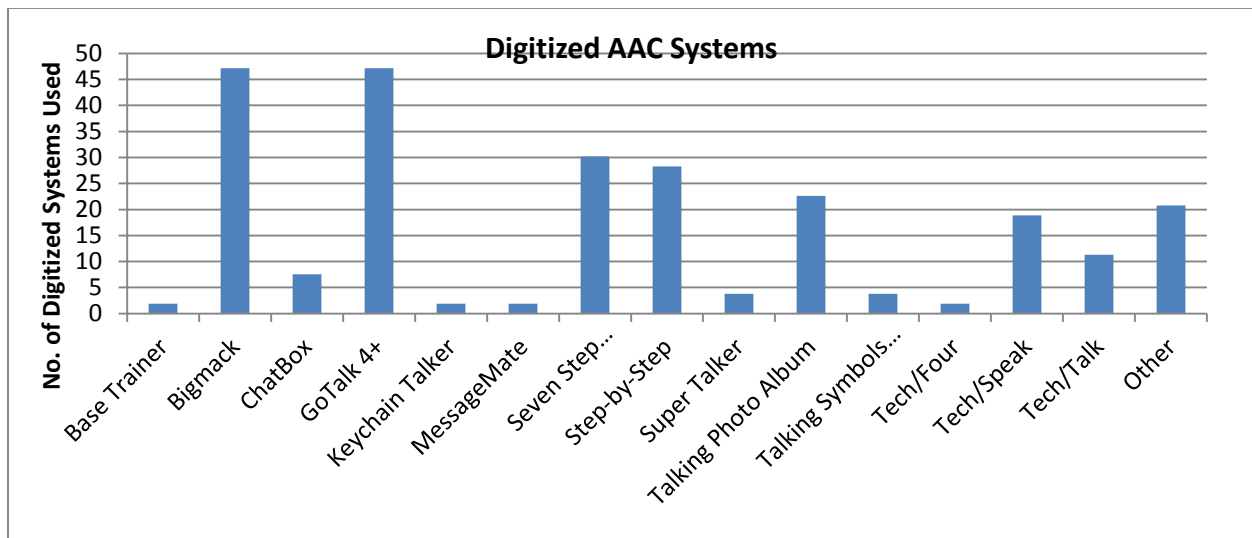
High Tech AAC Systems Used: The students were reported to use a wide variety of high tech AAC systems. Fig 6 provides information on the high tech AAC systems used. The two high tech systems

widely used were DynaVox DV4 (n = 43) and Dynavox V (n = 47). The other high tech AAC systems used were Mighty Mo, SpringBoard, Vanguard. In the other category the AAC systems reported were Ipod touch, Tango, Touch screen computers, Palm top etc.

Fig. 6
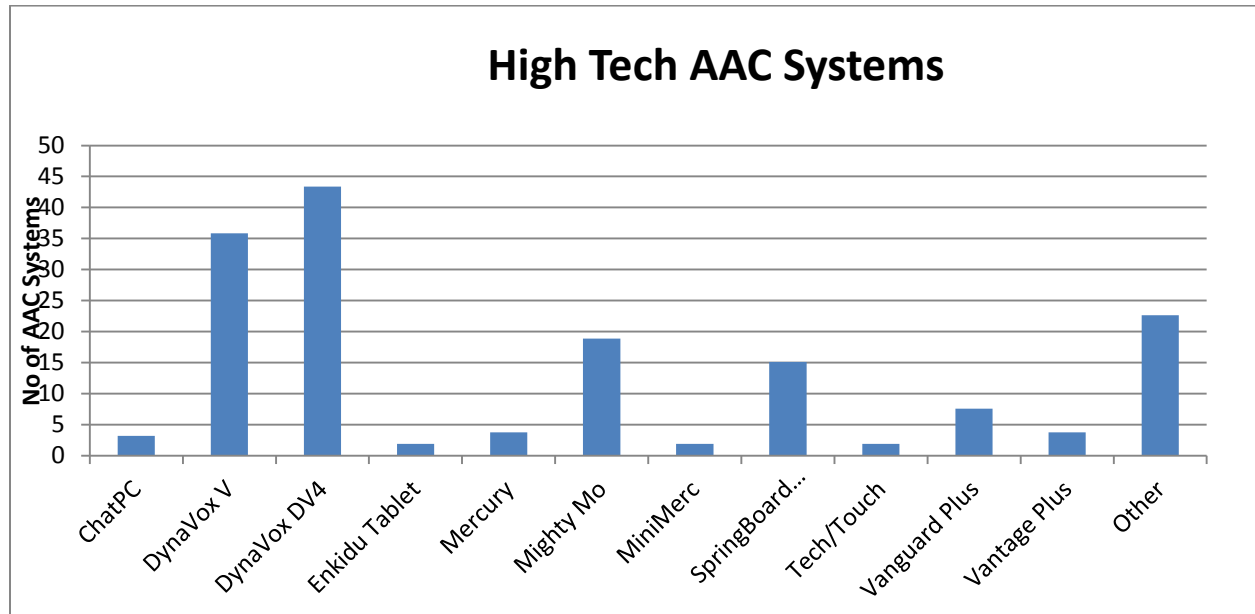
Topics Identified for Professional Development: Figure 7 provides information regarding the topics identified as professional development need. All the respondents identified more than three topics for professional development. Designing and maintaining AAC systems (n = 36) and using AAC for students with autism and intellectual disabilities (n = 35) were the two topics that were identified as for professional development. The other topics that were identified as a training need were designing and maintaining AAC systems and Using AAC to develop literacy skills.

Fig. 7.

Fig. 7. Topics Identified for Professional Development
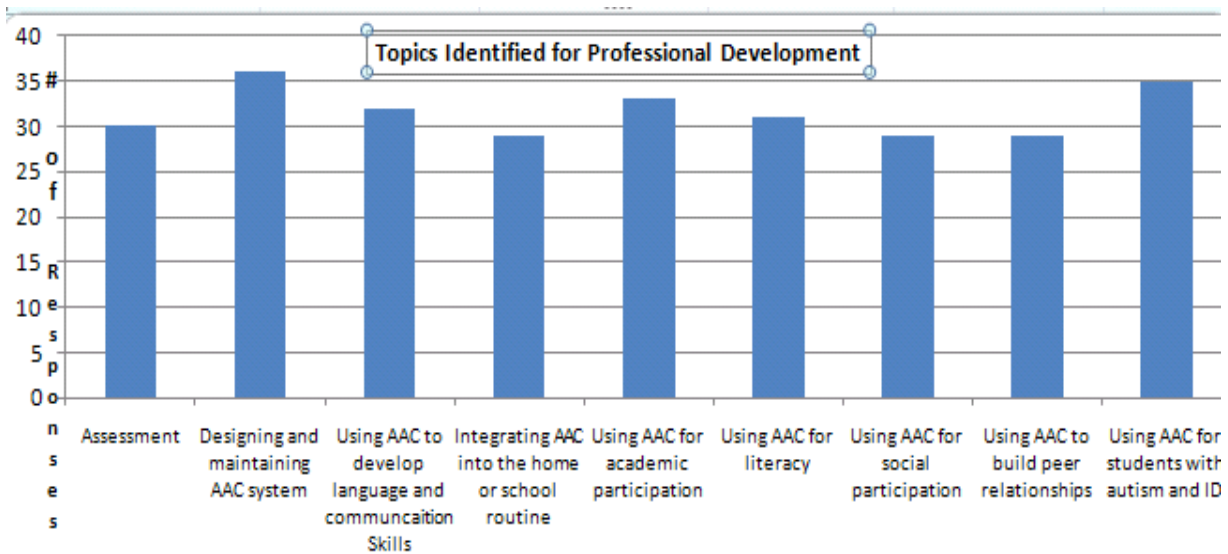
Discussion

The significance of this survey was that this was the first of its kind to be conducted in Connecticut. There were two critical findings in this survey. First, is the significant number of students requiring AAC services in Connecticut and second was the in-service professional development reported need of service providers.

In the current investigation approximately 3% of the students receiving special education services required AAC. Though these findings are somewhat similar findings have been reported by earlier surveys (e.g., Mates et. al., 1985). There were more boys than girls with disabilities who used or needed AAC. This is consistent with data on disability prevalence in the United States (e.g., Centers for Disease Control and Prevention, 2010; Lafontaine & DeRuyter, 1987; Lord & Bishop, 2010).

When the data was further disaggregated, it was interesting to note that more approximately 30% of students' special education services in pre-school programs required AAC. These findings are much higher than earlier studies (e.g., Binger & Light, 2006). This could be due to a variety of reasons. Firstly, the respondents were requested to provide information on students who needed AAC. Another contributing factor may have been an increase could be medical advances such as improved neo natal care (Binger & Light, 2005). Increase can also be due to increases in PDD rates have recently been

reported (Chakrabarti & Fombonne, 2001; Rice, 2009). Over 30% of the children reported using AAC were diagnosed as having autism and being on the PDD spectrum. This has implications for allocation of resources and services for children diagnosed with autism. In comparison to autism, the number of students with intellectual disabilities was much lower and this could be due to the advances in autism diagnosis (Lord & Bishop, 2010; Rice, 2009). However, it must be mentioned that in a recent report published by the national study on alternative assessment (Cameto et al., 2010) that there were more students' with intellectual disabilities than students with autism taking the alternate assessment.

Comparing the demographics of children needing and using AAC in the preschool and school age population it was very surprising to note the number of children needing and using AAC in the school age population declined sharply. A secondary analysis indicated that one district had reported a high number of children using/needing AAC both in the preschool program as well as in K-12. This could be due to several reasons. Firstly, the district had professionals who were knowledgeable regarding the significance of AAC and its relationship to language and literacy development. Secondly, it could also be that students are not receiving the services they needed and were not being prescribed AAC systems. The secondary analysis also indicated that when the data for the district that reported the largest number of students requiring/using AAC was disaggregated from the rest of the data, the number of AAC users dropped sharply. This suggests that students may not be getting the services they need. Providing AAC services is a complex process and a survey of speech language pathologist conducted in Connecticut in 2006-07 (Isakson & Merritt, 2008) indicated that there was a need for training so that AAC services could be provided to students.

The findings indicated that students were reported to use both aided (i.e., gestures and manual signs) as well as unaided (i.e., real objects, pictures and electronic systems) AAC systems. Within the electronic AAC systems a wide variety of low and high tech systems were used. Among all the AAC systems used, it was interesting to note that many of the students widely used pictures to communicate. This suggests that there was some form of communication system present for these students. It would have been interesting to investigate when and why were the pictures used. The results of the survey indicated the use of a wide variety of AAC systems and this implies that clinicians in the state had the information select a system that can be customized to meet the needs of student with differing abilities. On the other hand it also indicates that clinicians must have the knowledge of the AAC systems that are available and skills to prescribe customize and adapt them to suit the abilities and needs of students.

With regard to the areas of need for professional development, the results suggest that professional development was needed in several areas of implementation of AAC services. This need for professional development can be closely tied with the demographic information as assessment of students needing AAC was identified as an area in which training needed. AAC assessment and intervention is a dynamic process and it involves not only assessment for today and tomorrow, but also follow up assessment (Beukelman and Mirenda, 1998). Once the assessment is complete the assessment team must design intervention that includes designing an AAC system, maintaining and providing opportunities for communication so that students with CCN are able to participate in a variety of environments.

Children who use AAC must have access to their communication systems which have the flexibility and adaptability so that they can actively participate in all their environments and at the same time builds positive social relationships. However, in order to achieve this goal AAC users must have an interdisciplinary team that has the skills, knowledge and passion to provide opportunity and access to participation across environments. This interdisciplinary team's task is complex and they may require professional development in different areas so that they can provide the services that children who use AAC need. If we believe that students who use AAC have educational experiences like their non disabled peers, then the latter must have access to literacy skills as students who are unable to read and write are at a disadvantage as they progress through the school system (Beukelman & Mirenda, 1998). The team providing literacy support to AAC users must be able to adapt the lesson, instructional techniques and materials so that children who are unable to speak can benefit from literacy lessons and gain literacy skills.

The participants of the survey identified the use of AAC with students with autism and intellectual disabilities as an area of training need. Communication pervades all aspect of education (Calculator, 2009) and students with autism and intellectual disabilities must be able to communicate so that they can benefit from their school experiences. Mirenda (2009) points out that all students with autism spectrum disorders have some form of communication impairment and are likely to require AAC. To benefit optimally from education students with intellectual disabilities require effective and efficient methods of communication and this often entails the use of AAC (Calculator& Black, 2009). However, providing AAC services to this population is a complex and challenging process as AAC systems need to be designed to match individual strengths and needs and maintained to meet the needs of the environments.

Limitations

There are several limitations with this current investigation that should be noted. Self administered surveys are typically distributed to survey respondents (Dillman, 2000), but in the present investigation, the surveys needed to be distributed and collected through a secondary source, special education directors, thus creating an additional step in the survey process. The special education directors may have been able to get their information from their records of the student's Individualized Educational Programs (IEPs). This created an additional step in the survey that is the special education directors either collecting the information on AAC users and reporting it or relying on personnel to collect information to report. This additional step may have had implications both for the demographics of students needing/using AAC and the identified professional development needs as the individuals responding to the survey were not the service providers. With regard to the demographics if the information was from the IEPs, then only those students with recorded AAC services would have been reported. With regard to the areas in which service providers needed professional development, the areas reported may only reflect the areas of need as perceived by the special education directors, based on their experiences and knowledge.

Another threat was the low response rate. Despite sending three repeated reminders to the special education directors, the response was low. There can be two explanations for this. First, the directors may have been too busy and did not find the time to complete the surveys. Second, provision of AAC services may not be a priority in the district due to a lack of awareness of its significance for students with CCN and therefore the surveys were not returned.

Implications

In spite of its limitations this survey has clinical implications. The findings of the survey indicate that children who need and use AAC systems have different abilities and needs and their service providers must be equipped to meet these needs so that students with CCN who require AAC benefit from educational experiences. The results of the survey also have implications for institutions of higher education and organizations such as the State Educational Resource Center that provide pre-service training and in-service professional development. Providing AAC services to students with CCN can be challenging as the overall goal is to provide a communication system that is individualized so that they can find their 'voice'. Service providers must be prepared to provide high-quality AAC services and they may need continuous professional development in different aspects of service delivery for AAC.

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Appendix: AAC Survey

The State Education Resource Center (SERC) and the Connecticut State Department of Education (CSDE) Bureau of Special Education are conducting a survey to obtain information regarding children in Connecticut who need and or use augmentative and alternative communication (AAC). Particularly this survey will provide information on the demographics of children who use AAC and the types of AAC systems used in your early intervention service, school, and district. The information gathered from this survey will also assist SERC in evaluating the needs of service providers, planning training and/or providing technical assistance.

Please read the four points of information below prior to completing the survey, as it will help you answer the questions and produce more reliable results.

Definition of augmentative and alternative communication (AAC):
Augmentative and alternative communication involves using any methods of communication in addition to or in place of speech (e.g., objects, signs, pictures, gestures). Children with disabilities such as autism, cerebral palsy, Down syndrome, intellectual disabilities, and traumatic brain injury may need to use AAC to participate in academic, social, vocational, and community activities.

Types of AAC that children might use:
Children may use any or all of the following forms of AAC: eye pointing, gestures, signs, objects, communication books or boards, PECS, voice output systems (e.g., Bigmack, Tech/Talk, Mercury, and DynaVvox).

Children who are deaf or hard of hearing:
For the purposes of this survey, please do NOT include children whose primary special education exceptionality is deaf/hard of hearing. If a child who needs AAC has a primary exceptionality other than deaf/hard of hearing AND ALSO has a hearing impairment, you should include that child (e.g., a child with cerebral palsy who also has a hearing loss).

Examples of children who may need and or/use AAC:
- Marie has autism and uses a schedule board containing photographs to transition from one activity to another.
- Jane has severe apraxia of speech, and her speech is very difficult to understand. She pantomimes elaborately, points to pictures in her books, writes a few words, and sometimes gathers objects from around the room to help get her point across.
- Mary is a two-year-old with multiple disabilities, responding to few stimuli. She often throws things. Her main form of communication is by crying and looking towards objects.
- Tom has an intellectual disability. He mainly uses gestures, such as eye gazing and pointing to communicate.
- Julia is a two-and-half- year-old friendly, outgoing, enthusiastic girl with Down syndrome. She loves to play, watch cartoons, and look at picture books and point to them. Julia communicates via pointing, gestures, vocalizations and body language. Her parents have pointed out that these forms of communication often do not fulfill all Julia's of communication intents and she has started to throw things, cry, and bite.
- Tony has cerebral palsy. His speech is dysarthric and difficult to understand. His paraprofessional, who has been with him for four years, can easily understand him and always interprets his speech. Tony loves to

be with his peers and often shows frustration when he is not understood by them. His paraprofessional assists him with all of his class work and interprets his speech during classes.

It may take you 10 to 15 minutes to complete the survey.
This information will not be shared with other sources. Thank you for your cooperation.

1. In your district as of today, what is the total number of children who NEED/USE AAC?

_____

2. In your district, how many children in each age group NEED/USE AAC?

__Early Intervention Services
__Pre-K
__Kindergarten - 1st Grade
__Grades 2 - 4
__Grades 5 - 6
__Grades 7 - 8
__Grades 9 - 10
__Grades 11 - 12

3. How many males and females NEED/USE AAC?

__ Males
__ Females

4. Of those children who need and use AAC, how many have the following primary exceptionalities? (Cannot have hearing impairment as primary exceptionality)

__Autism/ PDD
__ Developmental Delay
__ Intellectual Disabilities
__ Multiple Disabilities
__ Deaf-blindness
__ Traumatic Brain Injury
__ Speech or Language
__ Impairment
__ Other

5. If you have mentioned "other" in question 7, please specify

_____

6. Of the children you have accounted for in question 7, how many also have

__ Cerebral palsy
__ Hearing impairment (with deaf-blindness)
__ Visual impairment (with deaf-blindness)

7. Of those children who need and use AAC, how many use the following AAC systems? (You may indicate more than one AAC system per child)

        __ Gestures (pointing, head nod, etc.)
        __ Signs (including adapted and unique signs)
        __ Use real objects (e.g., holding a cup to indicate desire for a drink)
        __ Picture communication boards/books containing photographs or line drawings
        __Electronic systems that talk (e.g., Bigmack, Tech/Talk, DynaVox)

8. What are the simple digitized systems used by the children? (Check any system used. You may indicate more than one AAC system per child)

        __ Bigmack
        __ Step- by- Step
        __Seven Step Communicator
        __ Keychain Talker
        __ Super Talker
        __ Talking Photo Album
        __ Talking Symbols Notepad
        __ Superhawk
        __ VociePal
        __ GoTalk 4+
        __ Base Trainer
        __ Tech/Four
        __ Tech/Speak
        __ Tech/Talk
        __ ChatBox
        __ MessageMate
        __ Other

9. If you have chosen "other" in question 11, please specify

        _____

10. What are the dynamic display systems used by the children? (Check any system used. You may indicate more than one AAC system per child)

        __ Enkidu Tablet
        __ DynaVox DV4
        __ Mighty Mo
        __ DynaVox V
        __ SringBoard Plus
        __ Vanguard Plus
        __ ChatPC
        __ Mercury
        __ MiniMerc
        __Tech/Touch
        __Other

11. If you have selected "other" in question 13, please specify:

        _____

12. In working with a student who uses augmentative and alternative communication, what are the areas in which you would like professional development and/or technical assistance? (You may indicate more than one area)

__ Assessment of children who need/use augmentative and alternative communication

__ Designing and maintaining augmentative and alternative communication systems for literacy, academic, and social participation (for example, making low tech AAC displays, programming devices, designing layouts, selecting vocabulary)

__ Strategies for using augmentative and alternative communication systems to develop language and communication skills of toddlers

__ Strategies for using augmentative and alternative communication systems to develop language and communication skills of preschool children

__ Strategies for integrating augmentative and alternative communication systems into the school routine

__ Strategies for using augmentative and alternative communication systems to provide opportunities for academic participation

__ Strategies for using augmentative and alternative communication systems to provide access to literacy

__Strategies for using augmentative and alternative communication systems to provide opportunities for social participation

__ Strategies for using augmentative and alternative communication systems to encourage peer relationships

__ Strategies to enhance communication skills of children with autism and intellectual impairment

13. Are there any comments you want to add? Is there anything you would like the State Education Resource Center (SERC), the Connecticut State Department of Education (CSDE), Bureau of Special Education, and Connecticut Birth to Three System to know or understand?

_____
_____
_____
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Thank you!