Abstract: This study provided an in-depth view of augmentative and alternative (AAC) team member’s perceptions of AAC device use with older students. Six special education teachers and one speech-language pathologist (SLP) who worked as members of an AAC team were interviewed to determine their perceptions of AAC use in junior high and high school settings. Results of qualitative analysis yielded a variety of common themes which were classified into four primary response categories: Student Communicative Competence, Barriers of AAC Use, Instructional Benefits of AAC Use, and Facilitators of AAC Use. Results may help professionals establish effective AAC teaming practices.

The Individuals with Disabilities Education Act (IDEA) of 1997 [P. L. 105-17] requires that assistive technology (AT) be considered for each child with a disability during Individualized Education Program (IEP) planning processes [29 U.S.C. 2201, §3(1)]. Of the more than 26,000 AT devices currently available for such consideration by IEP teams (Abledata, n.d.), one category of devices having particular importance is augmentative and alternative communication (AAC) systems. An AAC system is an “integrated group of components, including the symbols, aids, strategies, and techniques used by individuals to enhance communication” (American Speech-Language-Hearing Association, 1991, p. 10). AAC systems commonly considered in IEP planning include both low-tech (e.g., communication boards and notebooks) and high-tech (electronic) devices. Of particular importance are a range of electronic AAC devices that use synthetic or digitized speech output, allowing children with disabilities to communicate with their families with individuals in school and community settings.

In the past decade, and especially since the reauthorization of IDEA and its AT ‘consideration mandate,’ AAC has become an important and pressing issue for education professionals who serve children with disabilities and their families (Foley, 2001). Team collaboration is widely acknowledged as best practice and mandated by IDEA to most effectively identify, secure, and implement AAC (Beigel, 2000; Downing, 1999; Lahm & Nickels, 1999; Locke & Mirenda, 1992). Teachers and speech-language pathologists (SLPs) are typically important members of decision-making teams who consider and implementing AAC systems and individual devices (Beukelman & Mirenda, 1998; Parette, Huer, & Brotherson, 2001; Prelock, 2000; Soto, Muller, Hunt, & Goetz, 2001). Team constituency also includes other education professionals who have responsibility for making adaptations for children as they access the general education curriculum using AAC or implement their AAC device in classroom settings (American Speech-Language-Hearing Association, 1997-2004; Parette & Marr, 1997).

Unfortunately, the realities related to lack of funding availability for AAC, time constraints on the part of personnel (and families), logistical issues inherent in being sensitive to family and cultural nuances (Parette, Brotherson, & Huer, 2000), and other planning issues, schools may have a tendency to more effectively ‘economize’ by employing smaller numbers of team members (Beukelman & Mirenda, 1998). Smaller teams might
Responsibilities of AAC Teams

Conducting thorough AAC assessments of students with disabilities is of paramount importance in planning processes. Many student factors must be taken into consideration including motor, cognitive, language, sensory, and perceptual abilities (Beukelman & Mirenda, 1998; Bryant & Bryant, 2003). However, teams must also consider a range of family, cultural, and environmental factors prior to selection of appropriate AAC devices (Huer, 1997b; Parette et al., 2001; Biervliet & Parette, 1999). To assist teams in making appropriate decisions, various decision-making frameworks have been described that have applicability to effective AAC planning and implementation processes (cf. Beukelman & Mirenda, 1998; Costello & Shane, 1994; Glennen & DeCoste, 1997; Institute for Matching Person and Technology, 2004; Reed & Bowser, 1998; Williams, Stenach, Wolf, & Stanger, 1995; Wisconsin Assistive Technology Initiative, 1998; Yorkston & Karlan, 1986; Zabala, 1998). Each of these approaches provides AAC teams with information necessary to identify appropriate AAC systems and devices for children with disabilities.

Once an AAC device has been acquired for a child, team members may assume diverse roles and responsibilities (American Speech-Language-Hearing Association, 1999; Ehren, 2000; Locke & Mirenda, 1992; Parette & Marr, 1997; Prelock, 2000). Huer (1997a) discussed four professional roles often observed in the practice of AAC: trainer/educator; expert/prescriptive; negotiator; and collaborator. These responsibilities apply both to SLPs and to teachers serving children who need and/or use AAC devices. Typically, the professional literature has focused on team participation during the assessment process (Beukelman & Mirenda, 1998; Tanchak & Sawyer, 1995) while fewer researchers have focused on implementation of AAC use in middle and secondary education settings (e.g., Gray, 1995).

Given the complexity of AAC implementation, it is important for all team members, especially teachers who are typically the primary daily managers of AAC systems and devices at the middle and secondary education levels, to have the necessary knowledge and skills to facilitate AAC use across education environments and activities. Special education teachers often support and facilitate student use of AAC devices that enable them to meet the academic and social demands of school (Calculator, 1998; Calculator & Jorgensen, 1991; Kraat, 1987; Locke & Mirenda, 1992) and collaborate with SLPs to make primary decisions about messages contained in AAC devices (Soto, Muller, Hunt, & Goetz, 2001).

AAC Participation: A Challenge to Teachers

Unfortunately, some teachers regard AAC as a treatment for students with disabilities rather than as an accommodation (Woodward & Cuban, 2001). That is, it may be perceived as a panacea, or cure-all for the communication challenges demonstrated by children with disabilities (Angelo, 1996; Parette, 1998; Biervliet & Parette, 1999). Such perceptions evolve from a Western European value system that views disability as something that can be fixed or treated (Hanson, 1997). Following this logic, then, both teachers and family members may sometimes believe that acquisition of an AAC system will make it possible for a child with communication disabilities to immediately and effectively communicate (Parette & McMahan, 2002; Biervliet & Parette, 1999). However, this is seldom the case. Effective and efficient use of AAC systems rarely occurs without educated, coordinated effort that typically equates with considerable time investment for AAC system users and for people communicating with them (Downing, 1999; Soto et al., 2001).

Training Challenge for Education Professionals

Today’s school systems place many demands on education professionals at the middle and secondary levels. Training and education regarding AAC decision-making and classroom integration may not have been part of preservice university special education curricula for many professionals who must later play pivotal roles in AAC processes. Often, teachers and/or SLPs report inadequate knowledge and training for providing optimal AAC inter-
ventions after assessment has taken place (Locke & Mirenda, 1992; Parette & VanBiervliet, 1990). While special education teachers and SLPs are often expected to serve as case managers or members of educational teams, effective processes for maximized participation and/or leadership within these teams has not always been clear.

Special education teachers and SLPs are the ones who experience first-hand the barriers to AAC use. They are also the ones who can best identify facilitators of AAC use. Special education teachers’ and SLPs’ perspectives on facilitators and barriers of AAC device use are vital to improving practices related to effective implementation of AAC devices in the schools. While much has been written about teaming issues in AAC service delivery and, more specifically about decision-making regarding specific skills to be taught to middle and high school students (Apel, 1999; Apel & Swank, 1999; Reed, McLeod, & McAllister, 1999), relatively little has been written about teacher perceptions of AAC implementation in middle and high school settings (Apel). Such understanding of teacher perspectives regarding AAC implementation issues seems warranted if all team members are to participate in effective AAC decision-making and value the perspectives of others involved in such decision-making.

This study was designed to elicit and examine perceptions of special education teachers regarding management and use of AAC devices for students in junior high and high school classrooms. Additionally, characteristics of professional and family collaborations that might potentially facilitate or act as barriers to the use of AAC devices in school settings were investigated. Interviews were used to determine perceptions of special educators regarding the primary role of AAC device use, implementation across settings, device management, perceived barriers and facilitators of AAC device use, and characteristics of successful and unsuccessful collaborations.

Method

Research Design

Qualitative methodology was selected for this investigation because of its appropriateness in meeting the purpose of this study (i.e., to explore and examine the perceptions of classroom AAC team members regarding the management and use of AAC devices with middle and secondary school students). Miles and Huberman (1994) have identified strengths of qualitative research as (a) occurring in natural settings, which expands the possibility of understanding nonobvious issues; (b) allowing for holistic, rich, and complex findings; and (c) focusing on the lived experiences of participants. By employing qualitative methodology, the complexity and underlying issues are often brought to the forefront of discussion.

The method used in this investigation was the collective case study as described by Stake (2000). Collective case study involves study of more than one case in order to “investigate a phenomenon, population, or general condition” (p. 437). This approach assumes that investigating a number of cases will lead to better comprehension and better theorizing. Miles and Huberman (1994) contended that use of collective case study design strengthens the “precision, validity, and stability of the findings” (p. 29).

Participants

Participants in this study were six special education teachers and one SLP who work together as an AAC team in individual and inclusive classrooms within a large school district in the Midwest. All participants had multiple students with moderate-severe and/or multiple disabilities who were identified as users of AAC. Presented in Table 1 are participant demographic characteristics.

AAC users in the participants’ classrooms used a variety of both high- and low-tech AAC systems and devices. Some routinely used single message switches, visual strategies, and multiple message switches with recorded voice output capabilities. Other students in their classrooms used primarily high-tech devices that utilized a Windows type format, touch screen access, and digitized or recorded voice output.

Setting

The study was completed at a junior high school and high school setting within an Illinois public school district. The district is lo-
<table>
<thead>
<tr>
<th>Participant Name*</th>
<th>Yrs. Teaching Experience</th>
<th>Yrs. Experience with AAC</th>
<th>Formal and Informal Training in AAC</th>
<th>Classroom Type, Setting</th>
<th>N Students with AAC Devices</th>
<th>Devices Routinely Used in Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patti</td>
<td>13</td>
<td>13 years with low-tech devices; 6 years with high-tech devices</td>
<td>Two separate 3-hour special education courses (under-graduate)</td>
<td>Self-contained, High School</td>
<td>9</td>
<td>Multiple and single level switches, static screen voice output devices, high-tech devices with touch screen &amp; voice output</td>
</tr>
<tr>
<td>Kathy</td>
<td>32</td>
<td>16 years with low-tech and primitive switches; 9 years with high tech devices</td>
<td>Dynavox® seminar; Professional Development Course</td>
<td>Self-contained, High School</td>
<td>9</td>
<td>Multiple and single level switches, visual strategies, static screen devices, high-tech devices with voice output</td>
</tr>
<tr>
<td>Lana</td>
<td>20</td>
<td>20 years with low-tech devices</td>
<td>21 credit hours of assistive technology coursework; Dynavox® workshop; numerous conferences on AT and AAC</td>
<td>Self-contained, Junior High</td>
<td>2</td>
<td>Multiple and single level switches, visual strategies, static screen devices with recorded voice output, high-tech devices with touch screen capabilities and digitized or recorded voice output.</td>
</tr>
<tr>
<td>Vicky</td>
<td>2.5</td>
<td>2 years with low-tech devices</td>
<td>Section on Boardmaker® in an undergraduate class; Informal training from coworkers.</td>
<td>Self-contained, Junior High</td>
<td>9</td>
<td>Multiple and single level switches, visual strategies, static screen devices with recorded voice output, high-tech devices with touch screen capabilities and digitized or recorded voice output.</td>
</tr>
<tr>
<td>Erica</td>
<td>7</td>
<td>7 years with low-tech devices</td>
<td>AAC was discussed in one communication class.</td>
<td>Self-contained, Junior High</td>
<td>1</td>
<td>Multiple and single level switches, visual strategies, static screen devices with recorded voice output, high-tech devices with touch screen capabilities and digitized or recorded voice output.</td>
</tr>
<tr>
<td>Mary</td>
<td>26</td>
<td>14 years with low-tech devices</td>
<td>Certificate of Communicative Competence; Regional Institution of Assistive Technology (University of New Mexico); numerous AAC conferences</td>
<td>Self-contained and inclusive Junior High and High School classroom settings</td>
<td>17</td>
<td>Multiple and single level switches, visual strategies, static screen devices with recorded voice output, high-tech devices with touch screen &amp; digitized or recorded voice output.</td>
</tr>
</tbody>
</table>

* Participant names have been changed.
located within a town of approximately 45,000 people, with approximately 10,500 students making up the district’s population. Of this number, approximately 1,500 students received special education and related services.

All participants were interviewed in their classroom settings. Additional observations were made of all participants within their school classroom settings. Follow-up questions and member checking of findings were completed by phone interview or visit to the classroom settings.

Data Collection

Data were collected from interviews, observations, and a review of documentation (e.g., IEPs and communication notebooks) as well as a printout of AAC vocabulary and messages programmed into the high-tech devices. Selected interview questions were drawn from a framework of questions used in a previous investigation and modified for use in the school setting (cf. Parette et al., 2000). Questions were chosen because they aligned with the foci of this investigation: (a) the process of AAC device selection and training, (b) expectations and perceptions of AAC device use across settings, (c) supports provided by professionals to AAC device users and families, (d) stress and time management issues related to AAC device use, and (e) perceived benefits of and barriers to AAC device use. Interview questions were refined by the research team to align with the purpose of the study. However, use of a semi-structured format gave interviewers freedom to probe emerging themes and clarify responses to questions (see Appendix A for a list of interview questions). Prior to conducting interviews, team members received training in skills related to conducting a thorough and culturally sensitive qualitative interview. This training began with watching a video of interviews that demonstrated interviewing techniques that had been used in a previous investigation (Parette et al., 2001). Next the research team completed mock interviews and shared verbal feedback to one another. When all were satisfied with the mock interview/training process, participants were contacted and interviews scheduled. All interviews were audio-taped, transcribed, and entered into Nvivo®, a qualitative data software program. Nvivo® offered an efficient means of managing the large amount of data resulting from the interviews.

Once interviews were coded line-by-line, multiple coding was used to cross check the coding strategies and interpretation of data by researchers (Barbour, 2001). Specifically, members of the research team coded sections of interviews that had been previously coded by another team member. Discrepancies were discussed at team meetings until concordance was reached. This process resulted in expansion, refinement, and/or deletion of codes. Consequently, elements of each data set were multiply coded. This process “encouraged thoroughness” and provided the researchers with “opportunities for alternative interpretations” (p. 1116).

Thematic categories were then developed across cases by research team members. Team meetings were held several times to refine, add, and/or delete categories. This method allowed the emergence of specific and concrete patterns common to sets of cases. Use of this method yielded a rich description of the perceptions of classroom AAC team members who worked with children using AAC devices. The research team met consistently throughout the course of the study to confirm individual and cross-case analysis of findings. Major thematic categories are represented in a graphic display (see Figure 1). This lead to the creation of categories of meaning that fit the data, not the researchers’ preconceived ideas (Merriam, 1998).

Confirmability

Confirmability refers to the determination of accuracy or credibility of the findings through specific strategies. This study used several approaches: (a) triangulation of data, specifically observations, document review, and a review of AAC devices, vocabulary, and messages; (b) respondent validation; and (c) member checking. Triangulation was accomplished by a review of available artifacts to confirm ideas or concepts. In this study, the research team had access to students’ school records, AAC devices and prerecorded messages, and some of the written exchanges between the school staff and family/guardians,
such as communication notebooks. This information was used to confirm major themes that arose from analysis of interviews. For example, observations in the classroom confirmed teacher reports of specific device usage, implementation of specific intervention procedures, and difficulties with portability and durability of devices. Respondent validation was accomplished by presenting the participants with the graphic representation of major findings and requesting input as to the accuracy of findings. All participants validated the findings. Member checking was used to further add confirmability to findings. Member checking is the process of providing participants an opportunity to review materials (Janesick, 2000). In this study, member checking involved offering participants a copy of their direct quotations used in the final version of the manuscript and obtaining each participant’s approval for use of their individual quotes.

Findings

A variety of common themes emerged from the data. These themes were classified into four primary response categories: Student Communicative Competence, Barriers of AAC Use, Instructional Benefits of AAC Use, and Facilitators of AAC Use. Each of these themes contains subcategories. A visual representation of the four major themes and their subcategories is depicted in Figure 1.

Theme One: Student Communicative Competence

Team members suggested that increased student communicative competence was demonstrated through students’ use of the AAC devices and systems in functional communication exchanges with multiple communication partners. Several AAC team members suggested that a first step to increased communicative competence with AAC begins with dem-
onstration of value or ownership of the device. Most team members expressed that AAC users’ ownership had the effect of increasing AAC users’ interest in expanding use of AAC devices with a greater number of peers and members of the community at large. Increases in device use with a variety of communication partners was indicated as reciprocal to increased competence with AAC device use. Often, AAC users demonstrated device ownership by initiating their own message changes on their device(s) according to changes in communication partners. For example, Patti reported, “Like Danny, if there’s a person in the room that’s not in the device, he’ll take the device to me and gesture toward the set up menu and gesture towards the person . . . I need this in here.” This reflected both the team member’s willingness to be flexible with device programming and content and the AAC user’s role in the device’s changing message content due to changes in communication partners. In this school setting, student-driven message changes and teacher/SLP flexibility led to increased potential for both functional and individualized communication exchanges with a variety of communication partners. This combination of AAC user and team member responsiveness seemed to impact AAC users’ ability and desire to use and demonstrate ownership of the device. Kathy reflected,

It’s kind of like, I think, a kid who gets their first pair of glasses. You don’t think they’re ever going to keep them on and when they see how they can see better, it just makes such a difference.

Multiple team members perceived a change in AAC users’ communicative competence with AAC that influenced future interactions with communication partners. This often began with students experiencing device use as an effective communication tool in functional situations. The importance of this realization is reflected in Lana’s statement: “I think the kids just feel better that they now have a voice—and before they didn’t.” Patti provided another example:

Connor loves using his (real) voice. However, no one can understand a word he’s saying. So what I tend to do with Connor, because I want to basically respect his choice to use his voice. So he’ll answer sometimes with his voice and then I’ll say, ‘can you also tell me with your [device name]?’ and he does, he always does. And like today, here’s a perfect example. We had a different bus assistant this morning when we went out. And Connor, instead of trying to say his name with his voice, he knew that she was not going to understand. So he immediately went to his [device name], pulled up his page, and introduced himself as Connor. No prompt, nothing, and he told her where we were going.

Vicky also suggested increased communication opportunities with peers and community members:

Other students are interested in it (AAC device) and so . . . it offered more opportunities for them to interact with Alex. If he was talking to another student or answering me and he couldn’t find what he was trying to say, another student would lean over and try to help him. And the public and the community—I think people are just interested in devices.

Another way in which teachers felt that AAC users demonstrated increased competence in using their AAC devices occurred when they became independent in the physical care of their individual devices. Multiple team members emphasized the importance of independence in device management as leading to increased ownership of the device. Lana explained, “We teach the students how to clean and take care of their own devices.” Patti described in detail how these skills are taught:

The kids have a little flip book over there that shows them how to wipe it with a wet wipe and then dry it and charge it. I’m teaching Mike to do his own touch screen calibration because it goes out of calibration very quickly sometimes.

Several interviewees suggested the importance of AAC users as the initiators of communication exchanges as another indicator of increased communicative competence. Lana commented on the importance of AAC users’ ability to independently express themselves:
Being able to make protest statements . . . it’s so nice when the kids start realizing, ‘Oh, it is alright that I say no.’ And it’s so neat to see kids start engaging in conversations—one kid using AAC talking to another kid using AAC, asking a question and seeing that interaction.

The school SLP (Mary), in particular, stressed that the role of the initiator of communication must be taught in order to facilitate communicative competence. She suggested,

If you’re truly a communication teacher it changes the whole way you teach. You’re not a teacher that stands up and asks questions and they respond. You ask a question; they respond. Instead, you teach them to become active participants. So, an activity that might have taken 15 minutes before now probably takes me 25. Because I sit and make them initiate. I wait for them to initiate, so my whole concept of teaching communication has changed . . . you have to remember the device doesn’t make them communicators—it’s what they’re taught. And that’s what people forget . . . people forget, you just can’t put a [device name] in front of somebody and expect them to do it.

Along with strategies for teaching communication, Lana discussed the generalization process and the joy that she experienced in observing AAC use generalized outside of the classroom. She credited the team’s SLP for promoting generalization in this example:

[SLP name] does these really scripted routines with the kids. One of them involves communication exchanges about their weekends. In that, she teaches the kids to ask questions like ‘what did you do last night, what did you eat, who were you with?’ and we really thought, oh this is not going to generalize out past this particular (setting). One day, we’re sitting on the bus getting ready to go out to the community and I’m sitting next to one of my students with an AAC device. He says, ‘[Teacher name], what did you do last night?’ And I about fell off the bus seat when he said that. It was the neatest thing to see it click, that he felt I was a safe enough communication partner that he could ask that. He knew the script well enough to generalize it; he knew what the answers could possibly be.

Team members also suggested that AAC device use had a positive effect on AAC users’ behavior. Kathy noted, When they can’t tell you, ‘I want a drink, I’m thirsty, I feel sick’ . . . that’s what makes them frustrated . . . We have found that students who have a communication system, whether it’s a device, ring of pictures, or some other means to communicate, the behavior just really drops off because they finally have a way to tell us what they want.

Erica’s comments suggested that AAC device use improved student behavior even more than the use of visual or verbal cues. She gave an example about a specific AAC device user: John used to be very aggressive when expressing he was hungry or if he had to go to the bathroom. He wasn’t using his communication book. So we added an overlay to his [device name] and he would actually use it to say, “I have to go to the bathroom, I’m hungry, or I want to go to the rocking chair” and that worked for him better than the others we tried.

Theme Two: Barriers to AAC Device Use

Three major categories emerged as primary barriers of AAC device use. These categories included time constraints, AAC device-specific limitations, and incongruence with parents.

Team members suggested that time constraints limited optimal AAC device use. Responses involving time constraints were primarily divided into two distinct areas: time for collaboration and time for programming AAC devices.

Time constraints. Several team members mentioned limitations related to time for collaboration with other school professionals and/or families of AAC users. Patti discussed the value of consistent meetings with team members and families stating, “We’ll follow up with parents and have team meetings. I have really great parents and so the communication is good between home and school. The meetings are critical.” Lana mentioned additional time and collaboration needs related to lesson planning as a barrier to AAC device use:
But then you also have to address how you’re putting the device in the lesson plan because they’re not going to be used if people don’t plan for devices to be used. I’m writing how I’m incorporating AAC regardless of the type of device. It’s always written into the lesson plan. You’ve got to plan that. I think you have to have a closer relationship with other professionals either to have them as a resource to better serve the students’ needs or to make sure that they’re using the AAC (device) when they are seeing the kids. So you’ve got to have time to make relationships work. So that you’re making sure the device is used regardless.

Lana also suggested that the additional time requirements added to her stress as a teacher.

I think that it increases stress because you’re always thinking, ‘What could I program in? Did I miss something? Is there something else that the child wants to say? Is this the best vocabulary? Is this the vocabulary that I should be using in this particular environment?’

Nearly every team member mentioned time requirements for programming as a barrier to AAC device use. Often, programming of devices was an ongoing activity, rather than something that was finished during teacher planning time. Mary stated,

It just takes a lot of time. We program whenever we can . . . There’s times when I’ll say, ‘Patti, he needs that in, put it in really quick’ So, it’s nice to have other people who know how to program, because like I said, you just have to say, ‘I need this in real quick.’ And so they’ll do it while I’m teaching and I know I’m going to get to that in a few minutes . . . We’ve also taken it home a lot. I’ve taken devices home a lot, especially when we first got them. Patti and I took devices home for hours on end.

**AAC device-specific limitations.** A second category of barriers to AAC use that emerged included problems specific to AAC devices, users, and settings. These problems related to device portability and durability, training requirements and opportunities for training with specific devices, and variability in AAC device users’ abilities, their individual devices, and setting obstacles. Team members worked with students across a variety of settings including inclusive and self-contained classrooms, so problems faced were often individualized to the unique skills and abilities of AAC users and the environments in which AAC devices and systems were used. Lana noted difficulties that she faced integrating AAC device use into an inclusive middle school setting:

It’s much easier in an elementary building. Much, much easier to integrate. Because the classes are different at the secondary level. They’ve gone from a half-hour to 47 minutes and they’re mostly lecture formatted. So that is a variable to how much augmentative communication is going on (in that type of setting).

Kathy discussed integration difficulty from another angle.

I see more and more how the device makes the student more involved because they can understand what they want, but sometimes it takes a while for them to find a page or what they want to say and then the conversation has passed that, then that’s hard.

Other team members talked about limitations due to portability and durability problems experienced with specific devices. Mary stated, “The [device name’s] break all the time.” Kathy suggested, “I think they need to come up with something that weighs less, isn’t as cumbersome. They’re not practical to carry around, those big [device name]. You know they weigh like 15 pounds.”

Increased training needs and lack of opportunities for training for some of the high-tech devices was also suggested as a barrier to AAC device use. Team members with less experience and formal coursework related to AAC device use tended to express greater need for training with certain devices. Some team members reported taking device manuals home in order to have time to read them.

**Incongruence with parents/guardians.** A final subcategory of barriers to AAC use reported by team members was summed up as an apparent incongruence between teacher and parent/guardian goals and expectations of
AAC device use. Several team members mentioned that students with AAC often effectively use non-symbolic communication in their homes. Patti stated, “I think families have their way of communicating . . . Why do I have to get my device out to say ‘Spaghettios’ for dinner if I can go ‘I, E, O’ and she says, ‘oh, you’d like Spaghettios tonight’.” All interviewees felt that because parent/guardians understand their children’s forms of communication without the aid of their AAC devices, the use of the devices was not viewed as necessary in the home.

Team members also felt that some parents/guardians were unwilling to support use of the AAC devices in the home because of fears about technology. Patti expressed these views about one family: “They’re just not very technology proficient and they’re comfortable with their lifestyle the way it is and how much technology they use.” Others were perceived as simply lacking an understanding of the AAC device or not realizing their potential for improving communication abilities. Mary noted,

Parents are willing to get them. Parents are willing to buy them, but parents aren’t willing to use them at home . . . and I don’t think it’s maybe that they don’t value it, maybe they don’t realize the potential of what could be said and done. They could actually say more things.

While it may be true that parents may not realize the potential of AAC devices, the difference in device use may also be attributed to differing expectations for the device user across school professionals and parents/guardians. Kathy explained, “I mean they’ve made it this long; at home the parents can communicate with them. They feel they understand the student, so why do this?” Erica suggested that in her experience, the teachers often expected more from the child than the parents did.

My expectations might be different for their child than they have for their child. So I might have higher expectations. I want to see more independence. I want to see him using his device at home to communicate during dinnertime, but they understand his gestures. And so they don’t feel like they need to use it at home.

Team members suggested that implementing the devices at a younger age may increase AAC device usage in home environments. Lana explained,

Most of the parents find it very consuming and part of the problem is those devices were not put into effect at a younger age and at an older age the parents have made accommodations for the kids at home and they see the device as being a nuisance—as an added thing they’ve got to do. So it’s harder for them to really give it the value that is has for communication because they’ve gone so long without having it.

Kathy’s comments were in agreement:

And it’s busy at home, they have other children, they understand their students because they’ve lived with them at least fifteen years so they feel they can understand them. So it’s hard sometimes to convince them that this is essential for this student to make it outside your home when you’re not here or when they go to work that they need a device.

Theme Three: Instructional Benefits

One of the primary instructional benefits to AAC use identified by team members was more effective teaching, which was a direct result of the increased communicative competence of the AAC users. For example, as the AAC user became more communicatively competent with the AAC device, the teachers identified less of a need to maintain close proximity with their students and were able to move throughout the classroom, knowing that AAC users could initiate conversation or simply ask for the teacher’s attention. When asked how AAC use has affected her classroom Patti stated:

It’s dramatic, just dramatic. We used to have these little pieces of paper or little books that they would flip through. And I would have to stand there, physically. Proximity was a huge issue. Because I’m over here in front of another kid and that (hitting the desk as if hitting a picture icon) doesn’t
mean anything to me. So in terms of how much we can cover, how much we can teach, when I can stand in front of the room and teach four kids, three with devices, and I can tweak the pitch on those voices so I know whose is who and I don’t have to stand right behind them or right in front of them as they try to communicate with me.

Teachers also used the AAC devices as a means of assessing communication skills. Lana reported how she used the AAC device to assess her students’ reading levels.

You assume that the kids can read those symbols, decode those symbols, understand what they [the symbols] are meaning . . . Well, I wanted to know if the kids actually knew the reading words. So can I move them from a symbol level to a word level? We came up with lesson plans and overlays for the kids. I would show them a picture and they would just have the written word on the communication device and then they would have to find that, so at least we were able to do some assessment that we were never really able to do before.

Armed with knowledge of their students’ communication skills, teachers were able to effectively plan appropriate, individualized activities that revolved around communication.

You know what? Ultimately, it’s not going to matter if that kid knows the number five, especially at the level I’m teaching at, but if I can teach that kid to make a request, to go to someone and request something, or to make a comment to someone . . . that’s going to have a much more life-altering effect than identifying the number five.

Teachers attempted to use the devices frequently, incorporating them throughout the students’ day and during activities throughout the day. Kathy reflected on this total immersion in communication:

We try to use it in every aspect of their school day. They even take them to gym class. We want this thing to actually become a part of them in that they have a sense that this machine is them and that they don’t want to be without it.

Team members recognized and discussed the importance of appropriate intervention methods. As Mary stated,

You have to remember too, that the device doesn’t make them communicators, its what they are taught . . . you can’t just put a communication book in front of somebody and expect them to do it. So there’s that big chunk that still needs to be addressed.

One of the specific methods of intervention used by the team involved environmentally engineering the classroom and using scripting. This intervention method was initiated by the speech and language therapist and incorporated into the students’ daily routines by the teachers. Mary described how she uses scripting.

I use a lot of prompts that have been faded. I use a lot of setting up the environment. I use a lot of sabotaging and requiring communication for things to happen. I do very little. I ask the questions and they are expected to give me the answers. And we start when I just sit at a table and look at them and the first thing I do then: I model raising a hand. And a teacher may prompt a hand raise, and then I call on them and we fade from that.

As the students’ communicative competence increased, teachers’ began to observe increased AAC use across different settings, such as community sites and general education classrooms. As generalization occurred within general education classrooms, instructional benefits were noted for the general education teachers. Lana stated,

I think the other teachers, especially the general education teachers, like it because the student can actually respond back to them and it seems like a verbal voice. A voice from anything is better than the teachers saying “Oh, I don’t understand what he is saying.” And then they feel so bad. So then they don’t really want to interact with them because they’re not really sure what they are saying and they don’t know how to fake it.
However, team members also noted the need for consistency of use across settings since generalization was typically a difficult skill for their students with cognitive disabilities. Lana stated,

Well, I guess the most important thing is consistency of usage throughout the classroom. That you know the kids are being prompted to use it the same way consistently throughout the day. And not just is a specific activity so they’re going to generalize into the community, they’re going to generalize it with all difference staff people. So that has an effect to make sure everyone’s using it the same way.

The instructional benefits of AAC use were numerous and included decreased need for teacher proximity to the student, use of AAC devices for assessment, increased participation in activities, and increased use across settings.

**Theme Four: Facilitators**

Facilitators to the use of AAC devices were identified as parent/guardian involvement, effective teaming, and ease of device use. Parent/guardian involvement was perceived as facilitative when there was consistent communication between parents and school, when parents used the device with the child at home, and when parents participated in the team process. Descriptions of effective teaming included factors such as good communication between team members, consistency across settings, a willingness to teach and be taught by others, and administrative support for team meetings.

**Parent/guardian involvement.** All the team members expressed a desire for parental involvement. Lana’s statement exemplifies this desire. “I would love for them to play more of a role.” As discussed under **Theme Two: Barriers**, most of the team members desired more generalization of AAC use in the home environment. However, the team members were sensitive to parent/guardian perspectives as well. One of the strategies increasing parent/guardian involvement with AAC was to use AAC devices to communicate messages between home and school. Erica gave the following example.

Max uses an AAC device and that’s how we tell his Mom what his day was like. So before he leaves at the end of the day we program things like “Hi, Mom. Had a great day at school. I ate really well, but I don’t like broccoli.” You know, and then she does the same thing the following morning, so without that device she has to write me a note, she has to give me a ring. You know, so it really improves home-school communication.

**Effective teaming.** Effective teaming was a primary facilitator of effective AAC device use. These groups of team members functioned well together, communicated frequently, and were all focused on increasing the communication skills of their students with AAC systems and devices. As Kathy stated, “We have a great team here and nobody is afraid to say what they feel.” The SLP (Mary) appeared to be the informal team leader, encouraging teachers to use AAC, providing modeling of device use during language groups, and developing a positive rapport with teachers. Her primary goal was to empower teachers to be effective facilitators of AAC, as noted in her statement:

New teachers, I spend, like a whole year, trying to build a rapport with them because I figure if I could build a better rapport with them that I’ll get a lot more done in the long run . . . if they believe in me and see the value in it [AAC device use]. But they also have to see the value in communication for the student.

Effective teaming required time, a shared value of the importance of building communication skills, administrative support for team meetings and equipment needs, and support from all staff involved with students.

**Ease of AAC use.** Additionally, if the AAC device was easy to use, durable, and portable, it became a facilitator of use. Team members spoke of the ease of programming that added flexibility in the classroom. Mary stated,

There are times when I am running a weekend sheet at the high school. And I will say to the teacher, “he needs that in, put it in, real quick.” And they’ll put something in that we haven’t had. So it is nice to have these other people that know how to program.
Facilitators to AAC device use were identified as parent/guardian involvement, effective teaming, and ease of device use. If these facilitators were not in place these same issues quickly became barriers. This team worked diligently to ensure that parent/guardian involvement was maximized, that they operated as a team with common goals, and that they had the knowledge to make their students’ AAC systems and devices function as smoothly as possible.

**Discussion**

This study provided an in-depth view of AAC team member perceptions of AAC device use with older students, in junior and high school settings. Numerous findings emerged as depicted visually in Figure 1. Yet, the in-depth knowledge gained from this study offers some confirmations to previous literature and raises questions for future research (Beigel, 2000; Beukelman & Mirenda, 1998; Downing, 1999; Lahm & Nickels, 1999; Locke & Mirenda, 1992).

Team collaboration appeared to be the pivotal factor in successful AAC use in these public school settings. AAC device use resulted in increasing interactions with both peers and community members. Team members discussed the importance of using AAC devices in functional communication exchanges. This team consistently mentioned that AAC users in their programs were able to demonstrate their ownership of AAC devices by influencing the vocabulary and messages that were programmed into their devices. This is important, because it has been determined that if the vocabulary in the device is lacking, the user will be reluctant to use it (Murphy, Markova, Collins, & Moodie, 1996). Multiple members of the team also suggested that an important team role in influencing AAC users’ communicative competence was in facilitating communication initiation by AAC device users by implementing specific teaching strategies. This belief is in agreement with Downing (1999) who has suggested that teaching the communication initiator role will encourage more spontaneous use of AAC devices. The use of functional contexts further increases the potential for generalization of AAC device use. This is in line with guidelines published by the National Joint Committee for the Communicative Needs of Persons with Severe Disabilities (1992):

> These practices reflect the renewed awareness that teaching communication does not mean teaching just communicative forms. Rather, communication intervention means teaching communicative forms and functions-with the functions discoverable only in the interactive, socialized contexts in which these functions occur and are responded to by other people (p. 5).

Team members also found that AAC device use had a positive effect on AAC users’ behavior. This is in agreement with Beukelman and Mirenda’s (1998) assertion that a relationship exists between communication and challenging behavior. That is, challenging behaviors are, in themselves, a form of communication. Therefore, if the ability to communicate improves via use of an AAC device or system, it follows that challenging behaviors should show a concomitant decrease. This was consistently reported by team members in this investigation.

Categories of barriers to AAC device use included time constraints, specific AAC device problems, and incongruence with parents/guardians. These barriers were in agreement with prominent AAC literature (e.g., Beukelman & Mirenda, 1998; Downing, 1999; Ehren, 2000; Murphy et al., 1996). It is apparent that members of AAC teams would benefit from increased opportunities for training, time for planning, and collaboration with professionals and parents/guardians.

Instructional benefits were identified as effective teaching and increased AAC use across settings. These findings are consistent with previous literature (e.g., Beukelman & Mirenda, 1998; Downing, 1999). However, the significance of specific advantages for the teachers themselves has not been fully investigated. Reduction in the need for close proximity to the student offered the teachers more flexibility to attend to other students while simultaneously offering the student the chance to communicate in a natural, functional, and socially appropriate manner. Additionally, the use of environmental engineer-
ing to teach AAC use has not been fully explored in previous research, and especially not from the perspectives of AAC team members. Participants in this study indicated that environmental engineering was an effective form of intervention. The participants reported AAC use across settings, after students had been taught AAC use within the classroom. This report by the participants in this study is similar to that reported by Bock, Stoner, and Beck (2004).

Facilitators to increased use of the AAC devices were identified as parent/guardian involvement, effective teaming, and ease of AAC device use. Effective parent/guardian involvement has been consistently reported as a factor in effective AAC use (Beukelman & Mirenda, 1998; Downing, 1999; Parette & McMahen, 2002) and it emerged as a factor reported by the school personnel in this study. The technique of using the AAC device to increase communication from home to school, which in essence increased parent/guardian involvement with AAC devices, has not been addressed in previous research. This technique appeared to be effective when the student initiated the communication and the parents responded with messages of their own.

Additionally, the importance of teaming has been documented previously. Yet, perspectives of the team members themselves have not been fully investigated. Participants in this study were effective team members, valued the team, and relied heavily on the informal team leader, the SLP. Interestingly, the role of leader for the SLP contained several unofficial responsibilities, including establishing rapport with new teachers, modeling intervention techniques, and training team members on devices. Assessment issues have received the most focus for SLPs in the literature (e.g., Locke & Mirenda, 1992), yet this study has underscored the significance of laying the foundation for intervention with team members. The SLP created a climate or paradigm where AAC use was expected to be an integral part of students’ educational experiences. It is that paradigm, perhaps more than any other, which is central to effective teaming with AAC device use.

**References**


