

A Case Study of Team Supports for a Student with Autism's Communication and Engagement within the General Education Curriculum: Preliminary Report of the Beyond Access Model

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The Beyond Access model, a student and team supports planning model, was implemented with a single student who had been integrated into a general education classroom. Preliminary findings are presented through a case study of the 10-year-old student with autism, who, previous to the study, was reported to have an academic level of 18 months to 24 months. A 4-phase process for designing and evaluating supports led to improved collaborative teaming among team members, clarification of priority learning goals for the student, increased engagement and opportunities for learning by the student in the general education curriculum, and improved augmentative and alternative communication outcomes. Potential limitations and costs of the model include staff-time commitment and the involvement of a mentor to guide the process.

Keywords: Augmentative and alternative communication (AAC); Autism; Collaborative teaming; General education curriculum; Inclusive education

INTRODUCTION

The inclusion of students with significant disabilities (traditionally those with labels of mental retardation, autism, developmental disabilities, traumatic brain injury, and/or multiple disabilities) in general education classrooms in the USA has increased steadily since the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 1997. Despite this trend towards more inclusive education and the IDEA requirement for students to make progress within the general curriculum, most students with significant disabilities are still educated in self-contained classrooms by teachers who are not qualified to teach general education subject matter (IDEA, 1997). Four reasons for this practice are (a) disagreement about what is important to teach students with significant disabilities, (b) a lack of knowledge about how to plan student supports for learning general education content, (c) in-

effective collaborative teaming practices, and (d) systemic barriers to the implementation of best practices.

Determining Appropriate Educational Goals for Students with Significant Disabilities

There is considerable disagreement in the field of special education regarding the relative importance of academic or functional skills for students with significant disabilities (Tashie, Jorgensen, Shapiro-Barnard, Martin, & Schuh, 1996). The individualized educational plans (IEPs) of most students with significant disabilities reflect goals from functional life domains (domestic, leisure, functional academic, and vocational) and from embedded skill areas (communication, movement, social skills, and behavior). IDEA 1997 requires that all students make progress within the general education curriculum, but this has been interpreted by many states as meaning that

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students should learn access skills (e.g., following one-step directions, turn taking with peers) rather than academic content (Kleinert & Kearns, 2001).

It is a common belief that “many academic classes enrolling typical students are simply not relevant to the educational needs of students with severe disabilities” (Giangreco & Putnam, 1991, p. 257) because (a) the content is not seen as necessary for the future lifestyles of persons with severe disabilities (i.e., they will never need biology or physics as adults); (b) the content is too advanced for their cognitive abilities; and (c) the “modifications necessary for meaningful participation would be so extreme that the academic development of non-disabled students might be jeopardized” (Brown et al., 1989, p. 11).

Models Supporting Students' Participation and Learning within the General Education Curriculum

Most planning models for supporting students with significant disabilities in the general education curriculum promote a continuum of expectations and participation that acknowledges that many students will pursue academic content at a lower grade level (multilevel curriculum) or focus on learning objectives from a different curriculum area altogether (curriculum overlapping) (Brown et al., 1979; Calculator & Jorgensen, 1994; Downing, 2002; Falvey, 1995; Giangreco, Cloninger, & Iverson, 1998; Giangreco & Meyer, 1988; Janney & Snell, 2000; Kleinert & Kearns, 2001; Ryndak & Alper, 1996; Udvari-Solner, 1995; Wehmeyer, Sand, Knowlton, & Kozleski, 2002). Similarly, decisions about augmentative and alternative communication (AAC) supports and services continue to be based on decision-making and planning models that restrict students' learning of general education curriculum content. Snell and her colleagues (2003) reported that many practitioners make decisions regarding AAC practices based on assumptions such as (a) language age equals mental age, (b) lack of prerequisite skills means that students should not be engaged in higher level instruction, (c) the severity of students' diagnosed disability reflects their potential to learn, and (d) students' lack of past progress does not justify expending resources for AAC. For many students with significant disabilities who receive AAC intervention, the design of their AAC systems often focuses on vocabulary related to basic needs (e.g., ‘hungry,’ ‘bathroom,’ ‘need a break’), based on assumptions about what is most important for these students to communicate (National Joint Committee, 2002) and a lack of commitment to teaching literacy with commu-

nication (Erickson, Koppenhaver, Yoder, & Nance, 1997).

While acknowledging their own preference for full or nearly full integration, Beukelman and Mirenda (1998) proposed that teams plan students' educational programs and AAC supports based on a hierarchy of inclusion and participation that includes varying levels of (a) integration (full, selective, none); (b) academic participation (competitive, active, involved, none); (c) social participation (competitive, active, none); and (d) independence (independence, independent with set up, and assisted).

Collaborative Teaming for Supporting Students with Significant Disabilities

Segregated placements and students' lack of progress within the general education curriculum are related, in part, to inadequate professional knowledge and skills. Educators and therapists who received their professional training 10 or more years ago did not learn strategies for supporting students to fully participate and learn within the general education curriculum.

Teams also experience difficulty working effectively together, despite guidance in the literature about the relationship between effective collaborative teaming and student learning (Blackstone, 1989; Edelman & Giangreco, 1995; Giangreco, Cloninger, Dennis, & Edelman, 1994; Giangreco et al., 1998; Hunt, Soto, Maier, Muller, & Goetz, 2002; McCarthy et al., 1998; Snell & Janney, 2000; Villa, Thousand, Stainback, & Stainback, 1992). Furthermore, team members rarely take into consideration the quality of supports that are being provided as an important factor in evaluating student learning (McSheehan, Sonnenmeier, & Jorgensen, 2002).

In addition, Soto, Müller, Hunt, and Goetz (2001) identified four practical barriers to the successful inclusion of students who use AAC: (a) lack of training for those involved in providing supports to the student, (b) lack of time for collaborative teaming, (c) lack of opportunities for the student's participation in academics, and (d) a technophobia among team members.

Organizational and Systemic Barriers

Teams frequently face numerous systemic and organizational barriers to their members working together effectively (Garmston & Wellman, 1999), such as role confusion, lack of planning time, lack of access to professional development specific to this population of students, and related service delivery models that are ineffective (Jorgensen, Fisher, Sax, & Skoglund, 1998; McCarthy et al.,

1998; Rainforth, York, & Macdonald, 1992; Villa & Thousand, 1995). Additionally, teams often do not have access to a mentor or outside facilitator who can support the learning of new skills and collaborative processes (Fullan, 2001; Fullan & Miles, 1992; Olsen, 1994).

A New Model of Student and Team Planning that Promotes Engagement in General Education Curriculum and Enhanced Communication

Despite the shortcomings of some current practices in inclusive education and AAC, there are a growing number of case and small group studies that indicate that, with high expectations and the right supports, students with significant disabilities can be engaged in the general curriculum, participate more fully, communicate more effectively, learn general education curriculum content, and become literate (Broderick & Kasa-Hendrickson, 2001; Erickson et al., 1997; Hunt et al., 2002; Koppenhaver et al., 2001; Light, Roberts, DiMarco, & Greiner, 1998; Ryndak, Morrison, & Sommerstein, 1999). This emerging body of research is based on the application of Donnellan's (1984) criterion of the least dangerous assumption. According to this assumption, in the absence of conclusive data about the efficacy of a particular intervention, teams should make decisions that will have the least dangerous consequences for the student's future quality of life, should those assumptions be found to be wrong (Donnellan, 1984).

Aims

In the current report, we describe the use of a new model for planning student supports, including AAC, within a general education classroom: the Beyond Access model. At the same time, we address the capacity issues of the team and system that are responsible for sustaining a student's successful inclusion over time.

The Beyond Access model is distinguished from other student and team support planning models by: (a) the assumption that all students with significant disabilities can become literate and learn academic content; (b) the application of emerging best practices in inclusive education and AAC; (c) the use of the general education curriculum and classroom as the context for learning academics, communication, and functional skills; (d) the provision of support to teams to facilitate engagement in effective collaboration to plan, solve problems, and resolve conflicts; (e) the provision of professional development needed by the team to deliver student supports accurately and consistently; (f) consideration of organiza-

tional and systemic barriers that inhibit the use of best practices; and (g) the linkage of judgments about student learning to evaluation of the quality of supports.

The purpose of the current case study was to describe (a) the implementation of the Beyond Access model with one student and his educational team, (b) changes in team members' collaborative teaming practices, and (c) the preliminary outcomes for the student related to his communication system and his engagement in academic learning activities in a general education classroom. Several hypotheses are posed regarding the relationship between the implementation of the model and the performance of the team and student.

METHOD

Setting

This case study was conducted in an elementary school in a small, rural town in southern New Hampshire, USA. This school district had included students with significant disabilities in general education classrooms for more than 10 years and there was professional development and strong administrative support for these practices. Team members reported having a range of experience with supporting students with AAC needs. The intervention and research activities that form the basis of this report were initiated in November 2002 and continued through February 2004.

Participants

Student

Jay (a pseudonym) was 10 years, 3 months of age when use of the Beyond Access model was initiated in November 2002. He was diagnosed with autism at 2 years, 8 months of age by a developmental pediatrician. Jay lived at home with his father, stepmother, and three stepsiblings and was an active participant in all aspects of family life. He attended a fourth grade classroom in his neighborhood elementary school, where he had been a member of general education classrooms since first grade. Jay participated in a multi-level or parallel curriculum implemented by an instructional assistant within the general education classroom.

When Jay was 8 years, 9 months of age, his academic level was reported to be between 18 months to 24 months, based on an informal assessment completed by the district's developmental disabilities specialist. Standardized

assessments were attempted but not completed because of Jay's poor attention span, sensory issues, and unwillingness to do tasks on demand. Gross and fine motor imitation skills were reported to be a challenge. Matching skills were a relative strength, including matching pictures, letters, words, and numbers. Math skills were judged to be at a pre-readiness level. Emergent literacy skills were observed, including holding books upright, independently turning pages, and scanning pages in a book with a classmate. Jay appeared to enjoy listening to stories, especially those with repeated lines and rhythmical language. Priority learning goals for Jay emphasized sorting by category (e.g., animals, family members, colors, shapes), letter identification, functional sight words, one-to-one correspondence, quantity concepts (e.g., just one, more), and self-help skills including toileting.

The Test of Auditory Comprehension of Language – 3 (Carrow-Woolfolk, 1999) indicated Jay's receptive language skills to be below the first percentile for his age. Jay demonstrated understanding of one-part basic commands and independently followed a picture schedule for his daily routine. Expressively, Jay communicated nonverbally using facial expression, body movements, gestures, and vocalizations, as indicated in the following examples: (a) Jay turned his head and directed his eye gaze or directed the hand of another person to request desired objects, activities, and locations; and (b) he covered his ears and face when frustrated and used differentiated vocalizations to express excitement, protest, comfort, and agreement. Jay used some manual sign approximations (e.g., MORE, ME) and natural gestures (e.g., a two-finger point used to reference people, objects, places, and activities, often used as a request).

The Picture Exchange Communication System (PECS) (Frost & Bondy, 1994) had been initiated when Jay was in preschool in November 1996. He demonstrated understanding that pictures represent objects and could be exchanged for desired objects, actions, and activities. A modified PECS approach was used through second grade and eventually eliminated by September 2002, when Jay entered fourth grade. A Go Talk™ voice output communication aid (VOCA) was introduced to Jay in November 2000. Jay demonstrated inconsistent use of the Go Talk™ with cues from an adult to make requests (e.g., *BREAK*, *DRINK*, *SNACK*, and *PLAY WITH A FRIEND*). He occasionally pointed to a message on the Go Talk™ in response to commands such as *Point to the ___*.

Socially, Jay appeared to enjoy being part of peer activities, such as reading groups and

morning meetings (e.g., calendar, review of daily events, discussions), but did not sustain his attention for the activity's duration. He waved to greet others; however, his response was not always expedient. Although classmates approached Jay, he rarely initiated interactions.

Priority communication goals focused on functional receptive language skills: (a) following one- and two-step commands that incorporated common objects and actions related to school routines and materials (e.g., backpack, snack, lunch, book, drink); (b) selecting an appropriate picture or word to describe actions in pictures and to complete starter sentences such as *I see a ___*, *Eat the ___*, *Sleep in the ___*; and (c) making simple associations between related items, such as coat/hat, scissors/paper, lunch tray/milk carton. Expressive communication goals addressed using a VOCA to request or give information and to respond to yes/no questions.

Educational Team

Jay's educational team included his father and stepmother, classroom teacher, instructional assistant, speech-language pathologist (SLP), occupational therapist (OT), special educator, and district AAC consultant. The building associate principal, special education coordinator, and district special education director were involved on an as-needed basis. All team members were female except for Jay's father and ranged in age from 27 to 49 years, with a mean age of 38.6 years. Team members reported an average of 9.4 years (range = 4–15 years) of experience with inclusive education practices and an average of 10.4 years (range = 2–24 years) of experience with supporting students with primarily light-technology AAC needs. The educational team was provided administrative support for their participation in the Beyond Access project, including release time to participate in meetings and professional development credit for participating in project-sponsored training activities.

Intervention: Beyond Access Model

The four-phase Beyond Access model provides a framework for teams to enhance their capacity to plan for, implement, and evaluate student and team supports within the context of an inclusive classroom and school. A number of values- and evidence-based practices (McGregor & Vogelsberg, 1998) form the conceptual framework of the Beyond Access model, including high expectations for student learning, with a focus on practices for quality inclusive education, quality AAC supports, and collaborative teaming (see

Jorgensen, McSheehan, & Sonnenmeier, 2002a, 2002c). A mentor skilled in the Beyond Access best practices guided the team in their implementation of each phase of the model (see Jorgensen, McSheehan, & Sonnenmeier, 2002b).

Phase 1: Comprehensive Assessment of Student and Team Supports

Implementation of the Beyond Access model began with the completion of a Comprehensive Assessment of Student and Team Supports (CASTS). Three focus questions guided the CASTS: (a) What were three priorities for Jay's learning within the general education classroom? (b) What were the common and discrepant perspectives about Jay's abilities and supports? (c) What were common and discrepant perspectives about the overall functioning of the team?

Data were collected by the mentor (McSheehan) over a 3-week period during November and December 2002 and the process included thorough review of Jay's educational records, team members' completion of questionnaires, interviews with team and family members, and observations at school and home. The CASTS data were summarized and presented to the team for verification and clarification based on ratings of each team member's level of agreement (Kaner, 1996). Recommendations were proposed by the team to guide the next phase of the intervention.

Phase 2: Explore and Describe

Two questions focused the team's work during the explore and describe phase of the intervention: (a) What supports were needed for Jay's full engagement in and learning of general education curriculum content (e.g., unit/lesson planning, adaptation of materials, design of an AAC system)? (b) How did the team need to work together to support Jay's full engagement and learning (e.g., redefine their roles, increase planning time, gain new knowledge and skills)?

The mentor guided the team to explore and describe: (a) specific AAC features that would provide Jay access to vocabulary that was related to the academic learning standards; (b) instructional accommodations and supports for Jay to engage in the classroom activities; (c) effective meeting structures, decision-making processes, and teaming skills to support their collaboration as a team; and (d) the professional development that was needed to enhance the team members' knowledge and skills to achieve the desired student outcomes.

During this phase of the intervention, team members were encouraged to embrace a "Let's try it and see how it works" approach (adapted from Goossens', 1989). This approach supported the team to be creative and open-minded, particularly if a team member was unsure about how a given strategy might work. The team refined the strategies over time. Promising student and team supports were identified for implementation in Phase 3 of the intervention.

Phase 3: Observe and Document

The mentor guided the team to systematically implement and gather data on the promising student and team supports during this Phase 3 of the intervention. The team engaged in professional development activities related to the desired student outcomes. The mentor coached the team to focus on improving the consistency and quality of the communication and instructional supports provided, before answering the question, What does Jay know? By reviewing student work samples, observations, and videotapes of lessons, the team was able to describe the accuracy and consistency of the supports provided and Jay's performance in communicating using the VOCA and engaging in classroom activities over time. Concurrently, by reviewing the evaluations of meetings, the team was able to describe their accuracy and consistency in using collaborative teaming practices.

Phase 4: Review and Reflect

This fourth phase of the intervention consisted of a systematic review of and reflection on the student and team performance data. During team meetings, the mentor guided the team to use reflective practice methods (Montie et al., n.d; Weir, Jorgensen, & Dowd, 2002) to evaluate the delivery of the student and team supports and to reflect on the patterns of student and team performance. The team identified areas that needed further exploration for possible addition to the student or team supports (revisit Phase 2). This led to further data collection and analysis of student and team performance (revisit Phase 3), review and reflection of the performance summaries (revisit Phase 4), and further revisions. This process led to increased confidence in the student's work as evidence of engagement in the general education curriculum and the quality of team performance in providing specific supports.

Data Collection

Design

Observational case study methods (Bogdan & Biklen, 2003; McEwen & Karlan, 1990; Merriam, 1998) were used to collect data about the team's implementation of the Beyond Access model. The methods included participant observations, interviews, and the review of documents and artifacts. The data analyses focused on (a) the team's use of collaborative teaming structures, processes, and skills; (b) the design and implementation of the communication and instructional supports based on the Beyond Access model best practices for quality inclusive education and AAC; and (c) the changes in Jay's communication and engagement in the general education curriculum.

Phase 1 Data Collection

Document review. The mentor completed a comprehensive review of Jay's records as part of the Comprehensive Assessment of Student and Team Supports (CASTS), including current and past IEPs, evaluation reports (education, speech and language, occupational therapy), and other relevant documents (i.e., behavior support plan).

Questionnaires. The team, including Jay's parents and building administrators, completed a written questionnaire that focused on student and team capabilities and supports.

Interviews. Interviews lasting approximately 30 min each were conducted with Jay's team to clarify and expand information gleaned from the questionnaires. Also interviewed were the district special education director, Jay's instructional assistant from the previous school year, and the developmental disabilities specialist who had previously assessed Jay's learning abilities. These interviews comprised a total of 15 hours of data. Field notes were written during and immediately following each interview.

Observations. Five hours of observation were conducted at school by the mentor to collect data about Jay's educational program, communication skills, and engagement in the general education curriculum, and classroom routines; 4 hours of observation were completed at Jay's home. Field notes were written during and immediately following each observation. The observation data were summarized and reviewed by the team members for overall accuracy and for use in decision-making.

Artifacts. Student work samples, including worksheets and assignments, were collected. Copies of communication overlays and visual supports, such as Jay's daily schedule, were collected. Copies of the school district's policies

and practices also were collected, and these included the district's mission statement and professional development framework.

Phases 2, 3, and 4 Data Collection

Artifacts. The teacher's evaluation of Jay's performance was collected quarterly. Copies of communication overlays used during lessons were collected with field notes to document how Jay participated and communicated using these materials, and the communication and instructional supports that were provided by the team.

Observations. Weekly, the mentor conducted an average of four 30–60-min observations of Jay engaged in academic and other classroom activities, therapy sessions, and interactions with his classmates. Field notes were written during each observation to document Jay's use of the VOCA, the vocabulary/messages used, the content and instructional format of the academic lesson, and the communication and instructional supports provided.

Progress notes. Data on Jay's progress on his IEP goals, as recorded by the SLP, OT, and instructional assistant, were collected weekly. These data included documentation of the level of cueing (e.g., verbal cues and physical support; faded physical supports; minimal verbal cues) provided. Summaries of these data were included in the quarterly IEP progress reports.

Meeting notes. The mentor was a participant-observer during the weekly 45-min team-planning meeting. Field notes were written during and immediately following each meeting to document the team's use of meeting structures (e.g., agenda), processes (e.g., decision-making processes, having a facilitator), and skills (e.g., listening, seeking clarification). During the weekly planning meetings, the team reviewed and reflected on student work samples. Proposed changes in the design of communication overlays, instructional supports, and other materials were recorded in the meeting notes. The mentor collected copies of the meeting notes.

Questionnaires and interviews. A 30-min, semi-structured interview was conducted with the district's AAC consultant regarding her perceptions of the impact of the CASTS findings on the team's practices, 1 month following the CASTS summary meeting. Field notes were written during and immediately following the interview.

Team members completed a questionnaire regarding their perceived changes in their use of the model, their teaming practices, and Jay's communication, engagement, and learning following 8 months of implementation. Representative statements from the questionnaires were

presented to the team during a 90-min focus group interview conducted by the Beyond Access Project Director (Jorgensen), not the team's mentor. The team members provided feedback on the statements and clarified the meaning of discrepant statements. Field notes were written during and immediately following the focus group.

Data Analysis

Analysis Procedures

The data were subjected to content analysis using inductive methods (Bogdan & Biklen, 2003; Merriam, 1998) to identify themes and discrepancies between the reporters and the different sources of data that related to Jay's communication skills and engagement in the general education curriculum; that is, priorities of his educational program; implementation of communication and instructional supports; and overall team functioning, including meeting structures, processes, and skills.

Reliability and Validity

The themes and discrepancies regarding Jay's abilities, and team and school practices, were presented to the team for clarification and verification. Consensus regarding the findings was achieved using six levels of agreement guidelines (adapted from Kaner, 1996), with Level 1 corresponding to "I can say an unqualified 'yes' to the accuracy of this information" and Level 6 corresponding to "I feel that we have no clear sense of unity in the group. We need to do more work before consensus can be reached." All team members rated the findings for both the student and the team at the highest levels of agreement (1 and 2).

RESULTS

Implementation of Beyond Access Best Practices for Effective Collaborative Teaming

Meeting Structures, Team Processes, and Skills

Pre intervention. Analysis of the CASTS data revealed that, at the beginning of the implementation of the model, all team members expressed concern about the lack of planning meetings to address Jay's curricular, communication, and behavior support needs. The team, including Jay's parents, had only met once during the previous academic year. There was not enough time for all of the appropriate people to be available at meetings, and time for the SLP to

consult with other team members was not included on the IEP.

The CASTS data also revealed that past meetings had not been well facilitated, leaving team members feeling that they were unproductive. There was uniform concern among the team members about the lack of formal structures for communication, including communication between Jay's parent and the school staff.

Team collaboration outcomes. The team established a weekly 45-min meeting time for the classroom teacher, instructional assistant, special educator, SLP, OT, and district AAC consultant. The group began meeting consistently in January 2003. Jay's parents attended quarterly progress meetings and were invited to attend additional meetings as needed.

The mentor facilitated the meetings to model Beyond Access teaming processes and skills for an effective meeting, and to coach the team in implementing processes for generating ideas, making decisions, and dealing with conflict. A consistent agenda format was used that designated time for planning for communication and instructional supports, and concluded with an evaluation of the meeting process, during which team members provided and received feedback on their collaboration skills. Minutes were recorded for each meeting.

Increased respect and communication among team members was noted by the AAC consultant after one month: "It's hard to be respectful of other people's ideas if you are never in a meeting or you only hear their ideas through the grapevine." Meetings were found to be more productive and efficient than in the past. After 8 months, team members reflected that, "[The mentor] doesn't allow side conversation. We get through more of our agenda items."

Implementation of the Beyond Access Best Practices for Quality Inclusive Education

High Expectations and the Least Dangerous Assumption

Pre intervention. The CASTS data revealed that the team held a strengths-based perspective in their descriptions of Jay, both in written reports and interviews. However, all team members expressed the dilemma they faced in planning for Jay's involvement in academics, given his reported cognitive level of 18–24 months. Many team members reported that they thought it was more important for Jay to learn functional, daily living skills rather than academics. This dilemma was reflected in Jay's IEP. Goals did not emphasize the participation or learning of

grade-level curriculum content, but rather, developmental skills such as matching and one-to-one correspondence. The IEP also emphasized social communication rather than skills to communicate about grade-level curriculum.

Changes in the team's expectations for Jay's learning. Jay's team began to apply the criterion of the least dangerous assumption (Donnellan, 1984) in making decisions about what to teach Jay and how to evaluate his progress. After 8 months, one team member reported, "I don't necessarily believe as strongly as I had that prerequisite skills need to be demonstrated before presenting more challenging material." The team unanimously attributed this change in thinking to the application of the criterion of the least dangerous assumption (Donnellan, 1984).

In June 2003, the team rewrote Jay's IEP goals, embedding his communication goals within the general education curriculum learning standards. These goals were: (a) Jay will show he is engaged in social studies, math, science, and language arts lessons by responding to requests to communicate (e.g., share information, comment, choose, etc.); (b) Jay will select appropriate words from the fifth grade-spelling unit to complete sentences; and (c) Jay will match text to pictures of 50 words from the fifth grade spelling units.

Best Practices for General Education Class Membership and Full Participation

Pre intervention. Jay's educational program exemplified some of the best practices for his membership in the general education classroom. The team and school administrators were committed to Jay's inclusion in the general education classroom, as evidenced by his placement in general education classrooms since first grade. The team acknowledged the positive culture of the fourth grade classroom and strong communication between the classroom teacher and the instructional assistant.

Jay's educational program fell short in terms of his engagement in classroom activities. Although a member of the classroom, Jay was a passive participant in most activities and interactions. He rarely initiated comments and primarily responded to questions. Jay's behavior when using the bathroom was identified as a contributing factor, because he was frequently out of the classroom for up to 40 min at a time due to behavioral difficulties.

The instructional assistant was identified as being crucial to Jay's success in the classroom. She was described as the "point person", in that all communication regarding the implementation of Jay's educational program flowed through her.

While the team noted that it was appropriate for the instructional assistant to be the point person to support Jay's educational program day-to-day, they also expressed concern about having one person assume so much responsibility for making decisions. Team members were concerned about whether the decisions that the instructional assistant made were based on best practices and the priorities of the team or based on the instructional assistant's best attempt at responding quickly to a challenging situation.

Additionally, there was a misalignment between services and the team's identified learning priorities for Jay. Specifically, the enhancement of Jay's communication skills was a high priority, yet the SLP only had one 45-min therapy session per week. Also, the special educator's lack of scheduled time to provide direct support to Jay during lessons put her at a disadvantage when consulting with other team members.

Team outcomes for supporting class membership and full participation. The team focused on the use of positive behavior supports for Jay's use of the bathroom. They used visual supports, verbal cues for transitions, and predictable routines from Jay's perspective. After 2 months, Jay was successfully using the bathroom without incident. This success resulted in him being present in the classroom more often and less preoccupied with his toileting routines.

Many changes in service delivery were made as a result of the team's use of the Beyond Access model: (a) increased SLP's services to three, 30-min sessions per week; (b) increased special educator's time in the classroom; (c) increased consultation with the instructional assistant from the SLP, OT, and special educator; and (d) joint SLP and OT treatment sessions.

One month following the implementation of the Beyond Access model, Jay was reported and observed to be more involved in class activities. As an example, the class engaged in an activity entitled Survival, during which students asked one another for the answers to questions related to a recent social studies lesson. The team designed a communication overlay that included answers to questions, which allowed Jay to interact with his classmates within this lesson.

Best Practices for Curriculum, Instruction, and Supports

Pre intervention. The CASTS data revealed that Jay participated in primarily a multi-level or parallel curriculum within the classroom. About half of the time, he was using materials related to the lesson. The rest of the time Jay was either engaged in learning different content than his

classmates (e.g., learning math concepts during a spelling lesson) or was out of the classroom.

The team expressed a high level of confidence that the strategies they were using were effective in supporting Jay's learning. Successful supports provided by the instructional assistant included the tone of her voice, her physical movement and proximity to Jay, adjusting the level of demand within an activity, and understanding Jay's communication.

Team outcomes in curriculum, instruction and supports. There was an increase in the time the team spent in preparing materials and supports. One team member noted, "I know that I am spending more time thinking more deeply about the way that materials are constructed and how I am presenting them to Jay." Analysis of the meeting notes showed that 60% of the meeting time was spent on discussing or designing supports.

After 8 months of implementation of the Beyond Access model, the team noted a change in the way that they provided instructional and communication supports. "[The mentor] has shown us that when materials are presented in a consistent way with Jay, he does better engaging in an activity." And the team recognized the relationship between the provision of the supports and Jay's engagement. Said one team member: "We are beginning to realize that Jay's performance is linked to how well we perform. If we don't support Jay well, he won't do well." Another team member noted, "Jay is participating in more lessons. He is learning the classroom routines such as when we come to the board, when we sit in our seats, when we raise our hands."

Best Practices for Professional Development

Pre intervention. The CASTS data revealed that the team members recognized that they each had varying degrees of experience and desire to increase their knowledge and skills in using AAC supports and designing instructional supports to enhance Jay's communication, engagement, and learning of academics.

Changes in professional development practices. Job-embedded professional development activities (Danielson, 1996) were integrated into the weekly planning meetings, with an emphasis on best practices for quality AAC and inclusive curriculum design and instruction. Reflective practice strategies (Montie et al., n.d.; Weir et al., 2002) were used to lead discussions about student and team performance and provided meaningful professional development opportunities regarding the implementation of the

Beyond Access best practices. Observations made by the mentor and team members were used to guide discussions about the efficacy of the supports provided. The team learned to ask reflective questions regarding the observations, such as: Is this meaningful to Jay? Is this support resulting in Jay being more fully included? Are these supports effective to foster Jay's communication and learning? Are these supports realistic for staff to provide? Are these supports fostering active engagement with classmates?

Jay's desired learning outcomes were used to prioritize the team's professional development needs. Members read articles about designing AAC systems in inclusive education settings (e.g., McSheehan & Sonnenmeier, 2001; McSheehan et al., 2002; Sonnenmeier & McSheehan, 2003) and attended two workshops during the Spring of 2003 on the design and implementation of AAC strategies and communication-based approaches to problem behavior.

Implementation of Quality Augmentative and Alternative Communication

Support for a Reliable Yes/No Response

Pre intervention. The CASTS data revealed that Jay's yes/no response was not reliable using the Go Talk™. His typical response to yes/no questions was to select *NO*. Occasionally, he would follow this with an appropriate selection of *YES*.

Team outcomes for supporting a reliable yes/no response. The *YES* and *NO* symbols were positioned in different locations on the Go Talk™, to establish a new routine around Jay's use of these messages. The classroom teacher, instructional assistant, and related staff provided numerous opportunities for Jay to give yes/no responses throughout the day in response to preference and opinion type questions (versus questions that had a right or wrong answer). Jay's communication partners also modeled their yes/no responses on the Go Talk™.

Student outcomes. At the end of two months, the team unanimously agreed that Jay had an accurate and consistent yes/no response by pointing to the appropriate symbols on the VOCA.

Design and Support for the Use of a VOCA

Pre intervention. The CASTS data revealed that the Go Talk™ had been chosen for Jay's use, based on its availability within the school district and the team's expectations about what Jay needed to communicate. Jay's inconsistent

use of the Go Talk™ and uncertainty regarding his understanding of symbols contributed to the team's lack of exploration of other AAC options.

Team outcomes for supporting the use of the VOCA. The team agreed that the message capacity of the Go Talk™ was too limiting to meet Jay's immediate as well as his future communication needs (Benkelman & Mirenda, 1998). The team explored the use of dynamic display communication software (e.g., Speaking Dynamically™ Pro² with Boardmaker™³ symbols) within curricular activities. The SLP designed math concept overlays, for example, which resulted in an increase in Jay's engagement with age-appropriate materials.

A large-capacity dynamic display VOCA (DynaMyte™ 3100⁴) was introduced in June 2003. It was made available to Jay and his family for exploration during the summer. Jay's parents reported that he spent a great deal of time reviewing the child-user dictionary with no direct teaching of the location or meaning of the vocabulary. Jay demonstrated his ability to navigate several overlays to locate meaningful vocabulary. Jay repeatedly selected the symbol for *AIRPLANE*, for example, while looking out the window for airplanes. When Jay entered fifth grade in September 2003, the team chose to continue the exploration of the DynaMyte™ and planned for its use during classroom activities.

The team observed that Jay continued to use the nine-item Go Talk™ during class activities and transitions. The team agreed to explore and describe (Phase 2) Jay's use of the DynaMyte™ and to forego use of the Go Talk™ for a 2-week period. Based on observations of the team's provision of supports for Jay's use of the DynaMyte™ (Phase III), it became clear that the Go Talk™ was no longer useful and the team eliminated its use in October 2003.

The team explored the use of color-coding in the design of the overlays to examine the impact of color on Jay's use of the symbols. The displays on the Go Talk™ were replicated on the DynaMyte™ to support Jay's transition between VOCAs. The use of DynaSims was explored on the DynaMyte™. Speaking Dynamically™ Pro on a desktop computer was programmed with a duplicate set of the overlays from the DynaMyte™ using color Boardmaker™ symbols.

The team transcribed what Jay's classmates said during classroom activities throughout the day. A discrepancy analysis was completed to identify what Jay was able to communicate and what needed to be added to a communication overlay (Calculator & Jorgensen, 1994; Downing, 2002). Messages for core and topic specific vocabulary on the VOCA were expanded to

support Jay's participation in predictable routines, engagement in classroom learning activities, and social interactions (Beukelman & Mirenda, 1998; Calculator & Jorgensen, 1994). A 40-item core vocabulary overlay was designed based on a review of a list of curriculum-related words and available lists of core vocabulary (based on Bruno, 1999). The team SLP made subsequent revisions to the core vocabulary overlay. Classmates also made suggestions for edits to the core vocabulary overlay and additional revisions were made.

Professional Development for the Team's Support of the VOCA

Planning. A systematic approach to exploring supports for Jay's use of the VOCA was implemented during the weekly planning meetings. The AAC consultant noted a change in focus of the team's discussions within one month, stating, "The team is discussing how they can more efficiently use things that already were there, like the Go Talk™, like Speaking Dynamically™ Pro, and I think as a result Jay's learning [sic] is going to naturally increase because people are getting up to speed on how to incorporate these things." The team discussed curricular materials to identify specific message needs within lessons and how Jay might use the materials. The AAC consultant and SLP met weekly to review the VOCA and revise overlays as needed.

Facilitation strategies. An immersion approach to modeling the use of the VOCA was implemented. This approach was adapted from those used for augmented language input (Romski & Sevcik, 1996) and aided language stimulation (Goossens', Crain, & Elder, 1992) to provide multiple examples of AAC throughout the day. All of Jay's classmates had a copy of the core vocabulary overlay and were encouraged to use it during class discussions, writing activities, and teacher directed lessons. The classroom teacher used an enlarged copy of the core vocabulary overlay during whole class instruction. The team used the VOCA and/or paper overlays to provide modeling, restatements, and expansions of what Jay communicated during classroom activities. This immersion approach created a classroom culture of rich communication models for Jay.

Direct instruction was also provided to teach Jay the core vocabulary on the VOCA. These lessons included the use of fill-in-the-blank sentence tasks, such as, *Show me*.

AAC training. Professional development for the team was directly linked with the desired outcomes for Jay's communication development and learning. During the weekly planning meetings,

the team received training on how to program the DynaMyte™, design curriculum-based communication overlays, and facilitate communication within classroom activities. Jay's parents received an orientation to the DynaMyte™. The DynaMyte™ went home with Jay every night and on weekends.

Student Outcomes for the Use of VOCA

By the end of the first year, Jay had access to an expanded set of 80–100 curriculum-related messages on the DynaMyte™, in Speaking Dynamically™ Pro on a desktop computer, and on paper overlays. He demonstrated the ability to use DynaSims and Boardmaker™ symbols and switched easily between the DynaMyte™, computer, and paper overlays. The number of symbols per overlay varied from 9 to 49. The size of the symbols ranged from 1.5-inch squares on the nine-item overlays to half-inch squares on the 49-item overlays.

Jay communicated single words and word combinations using the VOCA to make requests for desired objects, actions, and locations, as well as comment on activities. Jay also demonstrated an increased ability to recognize words in print (e.g., choosing from an array of three, Jay demonstrated an ability to recognize eight words with 100% accuracy and an additional 13 words with 75% accuracy).

DISCUSSION

The findings of this case study provide preliminary information about the outcomes of a process for engaging educational teams in the implementation of values- and evidence-based practices in inclusive education and AAC. The case study provides documentation of the impact of this process on team functioning and one student's communication and level of engagement in the general education curriculum. Implementation of the Beyond Access model was accompanied by improved communication and planning among team members during meetings, increased expectations for student participation and engagement within classroom activities, improved alignment of service delivery with priorities for student learning, increased job-embedded professional development, and improved provision of effective student communication and instructional supports by the team. Concurrent with the changes in team collaboration and provision of supports was an increase in the student's access to curriculum-related vocabulary, improved communication outcomes,

increased engagement in classroom lessons, and a reduction in challenging behavior.

These results suggest that use of the Beyond Access model contributed to improved team functioning and student learning outcomes. This association is supported by other research in inclusive education and AAC. Collaborative teaming has been identified as being essential to the successful inclusion of students with significant disabilities in general education classrooms (Giangreco et al., 1994, 1998; Hunt et al., 2002; Villa et al., 1992), yet many teams lack the skills for effective teaming. A strength of the Beyond Access model was the active involvement of Jay's team in exploring and describing the teaming practices that were important for this team's successful collaboration (such as a predictable agenda, a meeting facilitator, and decision-making procedures), observing and documenting how these practices worked, and reflecting on and providing feedback to one another on the use of the teaming practices during meetings. The team's improved capacity for collaborative teaming resulted in more time spent on planning for and evaluating the impact of the student supports for communication and learning than had occurred in the past. The team noted the critical role of the mentor in coaching team members in their use of the new processes and skills (Fullan, 2001; Fullan & Miles, 1992; Olsen, 1994). These findings suggest that, when teams are learning new ways of working together as well as new professional skills, the involvement of an experienced mentor is a necessary support.

Jay's team members were able to address several systemic issues through their use of the Beyond Access model. One immediate change was the initiation of a weekly meeting that contributed to the team having the time that they needed to plan and evaluate the supports for Jay. Additionally, the implementation of the model supported changes in service delivery, collaborative service delivery by the SLP and OT, and increased support for the instructional assistant. These changes in service delivery were directly linked to the learning priorities for Jay that had been identified by the team. The Beyond Access model provided the team with a process for making service delivery decisions based on data and for reflecting on the impact of any given change (Edelman & Giangreco, 1995). This process is proposed to be important in the development of the team's capacity and confidence in making decisions that will lead to positive student outcomes.

Linking the team's professional development to Jay's desired outcomes is proposed to be critical to the team's effective provision of communica-

tion and instructional supports. Too often, students with significant disabilities are placed in general education classrooms where teams lack the knowledge and skills to support the students' learning. Through the implementation of the Beyond Access model, the team made decisions regarding their own knowledge and skill needs and engaged in structured, job-embedded professional development directly related to those needs (Danielson, 1996). In this way, the team increased their overall capacity for implementing best practices in inclusive education and AAC while supporting Jay's engagement in the general education curriculum.

The implementation of the Beyond Access best practices by the team resulted in changes in Jay's membership and participation in the general education classroom. The team observed an increase in Jay's engagement in lessons that they attributed to the application the least dangerous assumption (Donnellan, 1984) and high expectations for Jay's learning. Changes in their assumptions may have led to changes in the types of lessons and supports that the team planned for Jay. The team used the general education curriculum as the basis for planning for communication and instructional supports. Changes were made in the design of the VOCA, with the inclusion of curriculum-related vocabulary that previously had not been available to Jay. Changes in the VOCA and in the communication supports for its use (i.e., immersion) led to increased opportunities for Jay's engagement in the general education curriculum that led to increased opportunities for his learning of grade-level content. These findings suggest that the team's assumptions about the student's learning abilities may have been related to their planning process and ultimately, related to the student's successful (or unsuccessful) inclusion in and learning of the general education curriculum.

Several considerations regarding the Beyond Access model and this study need to be addressed through further demonstration and research. Preliminary feedback from the team and family suggests that the commitment to a weekly meeting could be a challenge for some teams, particularly if there are several students with extensive support needs in one school. The time spent by staff meeting about one student might be perceived as affecting staff availability to discuss or work with other students. On the other hand, one team's use of the Beyond Access model might lead to organizational changes that result in more planning time for every student's team. Additionally, Jay's team's commitment to a weekly meeting and allocation of staff time might be related to administrative support for a university-

based endeavor and not specifically the Beyond Access model. These are issues for further research.

The role of an external mentor appears to be critical to the implementation of the Beyond Access model. The involvement of a mentor was possible in this study because it was part of a university based research project. Within a school district, this need might be met by restructuring the job responsibilities of an experienced staff person (Jorgensen, Schuh, & Nisbet, in press) within the building or employing an outside consultant, but the latter may add financial costs.

A third limitation is the preliminary nature of the findings from this one case study. These findings suggest the potential of the Beyond Access model. Testing of the model with additional teams and evaluating the long-term outcomes for students will provide further insight regarding the usefulness of the model.

CONCLUSIONS

The Beyond Access model builds on the strengths of other approaches and models that have been proposed to support students' inclusion (Calculator & Jorgensen, 1994; Downing, 2002; Giangreco et al., 1998; Hunt et al., 2002), improve students' access to general curriculum (Wehmeyer et al., 2002), and enhance use of AAC (Beukelman & Mirenda, 1998; Hunt et al., 2002; Light et al., 1998). Additional research, beyond the case study level, is needed with more students at different grade levels to evaluate the long-term outcomes and overall benefits of using the Beyond Access model. These outcomes must be carefully considered in relationship to the overall costs associated with the model in comparison with the outcomes and long-term costs of more traditional approaches to educating students with significant disabilities. Further research is also needed to examine the possible relationships between collaborative teaming and student outcomes; the role of the mentor with respect to the change process; the implementation of specific best practices (such as the least dangerous assumption) and student outcomes; and systemic changes, such as different service delivery models and job-embedded professional development and student outcomes.

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Notes

- 1 The Go Talk™ is dedicated voice output communication system with four-levels of nine-item displays and a total of 6 min of recording time. It weighs less than 16 ounces. It is accessed via direct selection. The Go Talk™ is manufactured by Attainment Company, Inc. 504 Commerce Parkway, P.O. Box 930160, Verona, WI 53593-0160, USA. Tel: 1-800-327-4269. Website: <http://www.attainmentcompany.com/>
- 2 Speaking Dynamically™ Pro is a dynamic display software package for the design of communication boards on a computer. It may be accessed via direct selection (using a mouse or touch screen) or via scanning. Speaking Dynamically™ Pro is manufactured by Mayer-Johnson, Inc., P.O. Box 1579, Solana Beach, CA 92075-7579, USA. Tel: 1-800588-4548. Website: <http://www.mayer-johnson.com/>
- 3 Boardmaker™ is a graphics database containing over 3000 line drawings. Boardmaker™ is manufactured by Mayer-Johnson, Inc., P.O. Box 1579, Solana Beach, CA 92075-7579, USA. Tel: 1-800588-4548. Website: <http://www.mayer-johnson.com/>
- 4 The DynaMyte™ is a dedicated voice output communication system with dynamic display and synthesized speech. It weighs approximately three pounds. It may be accessed via direct selection or scanning. The DynaMyte™ is manufactured by DynaVox Systems LLC, 2100 Wharton St., Suite 400, Pittsburgh, PA 15203, USA. Tel: 1-800-344-1778. Website: <http://www.dynavoxsys.com/>

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