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ABSTRACT

This final report discusses the activities and outcomes of a 3-year federally funded project that investigated the effectiveness of a collaborative teaming process to increase the academic achievement and social participation of elementary students with augmentative and alternative (AAC) needs who were members of general education classrooms. The collaborative teaming process provided members of the inclusion support team (general and special education teachers, instructional assistants, parents of the focus students, and speech and language therapists) with an opportunity to share their expertise in developing and implementing effective instructional and support strategies to facilitate the social participation and academic progress of the students. Three inclusion teams then evaluated the collaborative teaming process. Effectiveness of the team-generated support plans for six students, including three with severe disabilities and three who were at risk for academic underachievement or failure, was also evaluated through behavioral observations and team interviews. Direct and collateral outcomes of the project included the following: (1) increased inclusion team members' sense of self-efficacy; (2) increased social and academic participation of the focus students in the general education classroom; and (3) participant satisfaction with the process and results. Three published experimental research papers are attached and include references. (CR)

FINAL PROJECT REPORT

Field-Initiated Research Project

CFDA 84.324C

Self-Efficacy and the Inclusion of Students with AAC Needs

H324C980087

Project Dates: October, 1998-September, 2001

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Self-Efficacy and the Inclusion of Students with AAC Needs

I. Project Summary

The purpose of this Field-Initiated Research Project was to investigate the effectiveness of a collaborative teaming process to increase the academic achievement and social participation of students with augmentative and alternative (AAC) needs who were members of general education classrooms, with an expected collateral increase in educational team members' sense of self-efficacy. The collaborative teaming process provided members of the inclusion support team (general and special education teachers, instructional assistants, parents of the focus student, and speech and language therapists) with an opportunity to share their expertise in developing and implementing effective instructional and support strategies to facilitate the social participation and academic progress of the students. Effectiveness of the team-generated support plans for students was evaluated through behavioral observations and team interviews.

During Year 1 focus group methodology was used to investigate educational team members' perceptions of critical issues associated with supporting students with severe disabilities and AAC needs in general education classrooms. Two research reports were generated from the interview data and were published in peer-refereed journals (see page 3 for a description of each study and the journal citations). In addition a survey instrument was developed and field-tested to form a reliable and valid measure of team member self-efficacy.

During Year 02 three inclusion teams, reflecting the demographic diversity of California, participated in a multiple baseline time series study to evaluate the collaborative teaming process designed to promote interactive exchanges and active

participation of the AAC user, resulting in a "participation plan" for each focus student. Multiple forms of qualitative data were collected at regular intervals, and team members completed the self-efficacy survey before and after they were exposed to the intervention package. The resulting research paper was published in a peer-refereed journal (see page 3).

During Year 03 research was conducted to extend the application of the collaborative teaming model to include supporting students with and without disabilities in general education classrooms. The six focus students included three children with severe disabilities and three children who were at risk for academic underachievement or failure. Once again collaborative development and implementation of support plans for each student was associated with increases in academic skills, engagement in classroom activities, and positive interactions with peers. The resulting research report will be published in a peer-refereed journal (see page 3).

Direct and collateral outcomes of the project included the following: 1) increased inclusion team members' sense of self-efficacy; 2) increased social and academic participation of the focus students in the general education classroom; and 3) participant satisfaction with the process and the results. The project also resulted in an instrument to measure team members' sense of self-efficacy and four published experimental research papers.

II. Project Accomplishments

The accomplishments of the project in the areas of **research papers** and **dissemination activities** will be described below.

A. Research Papers

Year 1

Soto, G., Muller, E., Hunt, P., and Goetz, L. (2001). Critical issues in the inclusion of students who use augmentative and alternative communication: An educational team perspective. *Augmentative and Alternative Communication, 17*, 62-72.

Focus group research methodology was used to investigate educational team members' perceptions of critical issues regarding the inclusive education of students with augmentative and alternative communication (AAC) needs. General education and inclusion support teachers, instructional assistants, parents, and speech-language pathologists participated in five focus groups that yielded a database for thematic analysis using qualitative research methods. A number of procedures were employed to verify and validate the data collection process and findings. The dominant theme across all focus groups was the participants' recognition of the fact that inclusive education of students with AAC needs is possible and desirable, with clear benefits for the focus students, their peers, parents, and the school community at large. Other themes emerged as prerequisite conditions for a successful inclusive program, including administrative support, AAC training for the entire educational team, and team collaboration.

Soto, G., Muller, E., Hunt, P., and Goetz, L. (2001). Professional skills for serving students who use AAC in general education classrooms: A team perspective. *Language, Speech, and Hearing Services in Schools, 32,* 51-56.

The roles of school-based professionals serving students with augmentative and alternative communication needs are changing in light of the inclusion movement. Focus group research methodology was used to investigate professional skills regarded by educational team members as necessary to support students who used AAC in general education classrooms. Educational teams consisted of speech-language pathologists, classroom teachers, inclusion support teachers, instructional assistants, and parents. All valued the ability to work collaboratively, provide access to the core curriculum, cultivate social supports, maintain and operate the AAC system, and create classroom structures to educate heterogeneous groups of students.

Year 2

Hunt, P., Soto, G., Maier, J., Muller, E., & Goetz, L. (2002). Collaborative teaming to support students with augmentative and alternative communication needs in general education classrooms. *Augmentative and Alternative Communication,* 20-35.

This study evaluated the effectiveness of the use of a team collaboration process to increase the academic achievement and social participation of three students with AAC needs who were members of general education classrooms. Three educational teams that included the general education teacher, inclusion support teacher, instructional assistant,

speech and language pathologist, and one of the student's parents developed and collaboratively implemented Unified Plans of Support for the students that consisted of academic adaptations and communication and social supports. Effectiveness of the support plans was evaluated through behavioral observations and team interviews. Evaluation outcomes suggested that consistent implementation of the plans of support by members of the teams was associated with increases in academic skills, social interactions with peers, engagement in classroom activities, and use by the students of a variety of AAC devices.

Year 3

Hunt, P., Soto, G., Maier, J., & Doering, K. (in press). Collaborative teaming to support students at risk and students with severe disabilities in general education classrooms. *Exceptional Children.*

This study investigated the effectiveness of a general education/special education collaborative teaming process on the academic and social participation of six students in general education classrooms. Three of the students experienced severe disabilities. The other three were considered academically at risk, although had not been formally identified as having special education needs. Each student was supported by an educational team that included general and special education personnel and the students' parents. Each team developed and collaboratively implemented individualized Unified Plans of Support for one student at risk and a classmate with disabilities, consisting of academic adaptations and communication and social supports. The effectiveness of the

support plans was evaluated through behavioral observations and team interviews. Intervention outcomes suggested that for each of the six students consistent implementation of the plans of support by team members was associated with increases in academic skills, engagement in classroom activities, interactions with peers, and student-initiated interactions.

B. Dissemination Activities

Dissemination of project findings occurred through publication of research reports in relevant journals, dissemination of published research papers by the California State-Wide Systems Change Project, presentations at state and local educational conferences, and inclusion in the teacher preparation programs at San Francisco State University and the π

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AAC Augmentative and Alternative Communication

Critical Issues in the Inclusion of Students Who Use Augmentative and Alternative Communication: An Educational Team Perspective

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Focus group research methodology was used to investigate educational team members' perceptions of critical issues regarding the inclusive education of students with augmentative and alternative communication (AAC) needs. General education and inclusion support teachers, instructional assistants, parents, and speech-language pathologists participated in five focus groups that yielded a database for thematic analysis using qualitative research methods. A number of procedures were employed to verify and validate the data collection process and findings. The dominant theme across all focus groups was the participants' recognition of the fact that inclusive education of students with AAC needs is possible and desirable, with clear benefits for the focus students, their peers, parents, and the school community at large. Other themes emerged as prerequisite conditions for a successful inclusive program, including administrative support, AAC training for the entire educational team, and team collaboration. These emergent themes are described and interpreted within and across groups. The implications of the results are discussed in terms of program design and implementation.

KEY WORDS: augmentative and alternative communication (AAC), collaborative teaming, focus groups, inclusion

Inclusive education continues to emerge as a promising educational practice for teaching students with augmentative and alternative communication (AAC) needs (Erickson, Koppenhaver, Yoder, & Nance, 1997; Erickson & Koppenhaver, 1998; Koppenhaver, Spadorcia, & Erickson, 1998; Sturm, 1998). Full inclusion occurs when students with disabilities are full-time members of age-appropriate, regular classrooms in their home schools and receive any support necessary to participate in both the learning and the social communities of their peers (Goetz, 1995; Neary & Halvorsen, 1994). A fully inclusive school is defined by zero exclusion. In other words, (a) students with disabilities participate in core curriculum and activities that provide the context for meeting their Individualized Education Program (IEP) objectives; (b) students receive supplementary and special education services through regularly planned, collaborative teaming by special and general educators, related service professionals, paraprofessionals, parents, peers, and administrators; and (c) any services provided by paraprofessional staff are regularly supervised and monitored by certified staff (Neary & Halvorsen, 1994).

A considerable body of literature has documented positive outcomes of inclusive education for students with severe disabilities, many of whom have AAC needs. The following outcomes have been reported: (a) increased social participation and access to regular curriculum (Hunt, Alwell, Farron-Davis, & Goetz, 1996); (b) learning and generalization of new social, sensory, motor, and communication behaviors (Gee, Graham, Sailor, & Goetz, 1995; Hunt, Staub, Alwell, & Goetz, 1994); and (c) improvement of the overall quality of IEP objectives (Hunt & Farron-Davis, 1992; Hunt, Farron-Davis, Beckstead, Curtis, & Goetz, 1994). Significant benefits of inclusion have also been reported for class members without disabilities, including increased sensitivity, empathy, and acceptance of human differences (Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993; Peck, Donaldson, & Pezzoli, 1990).

Existing literature indicates a number of variables that are essential to the success of inclusive schooling for students with severe disabilities, including collaborative teaming, educational supports for diverse learners, parental involvement, support for the development of positive social supports and friendships

and implementation of positive behavioral supports for students with challenging behaviors (Giangreco, 2000; Hunt, Hirose-Hatae, Doering, Karasoff, & Goetz, in press; Wilson, 1999). Erickson et al. (1997) also noted that if students with severe disabilities are to be fully included, then academic participation must be a central part of their educational programs.

The full inclusion of students with AAC needs presents unique challenges to the classroom teachers and other educational team members who support them, due, in part, to (a) the complex array of technologies that these students often require for learning, mobility, and active participation in the classroom; (b) the fact that they often use multifaceted communication systems that include both nonelectronic and electronic communication options; (c) the increased demands for their academic involvement in the general education curriculum; and (d) the continuous need for collaborative teaming to support their active participation as full-time members of general education classrooms (Erickson et al., 1997; Erickson & Koppenhaver, 1998; Koppenhaver et al., 1998; Sturm, 1998). Although considerable attention has been devoted to identifying what educational teams believe are critical issues for the success of inclusive education in general (Hunt et al., 2000; Stanovich, 1999), little information is available regarding what educational teams believe to be critical issues specific to the inclusion of students with AAC needs—the purpose of this study.

Focus group methodology was selected as a means for identifying structures, processes, and activities that promote and support the inclusive education of students with AAC needs. The focus group process allowed key stakeholders (i.e., classroom teachers, inclusion support teachers, parents, instructional assistants, and speech-language pathologists) to share their perceptions and listen and respond to the views of other members of the group during discussions led by a facilitator (Krueger, 1993).

METHOD

Participants

As recommended by qualitative researchers (Greenbaum, 1993; Krueger, 1994, 1998a; Morgan, 1988, 1993; Patton, 1990; Stewart & Shamdasani, 1990), the focus group participants were selected based on their knowledge and experience in the subject matter of interest (i.e., inclusive education of students with AAC needs). Special education administrators from school districts throughout the San Francisco Bay Area were contacted and asked to identify AAC specialists who, usually on an itinerant basis, support students with identified AAC needs in their respective school districts. These specialists were personally contacted and asked to identify the AAC-using students on their caseloads who were full-time members of general education classrooms. The specialists also provided the researchers with the names and telephone numbers of core members of those students' educational teams (e.g., parents, general education teachers, inclusion support personnel, and speech-language pathologists). Core members were defined as those members who had substantial involvement with the student (Giangreco, 2000). A total of 30 members of educational teams, each with more than 3 years of experience working in inclusive classrooms, agreed to participate in a focus group discussion.

Five focus groups were organized according to participants' roles within educational teams: inclusion support teachers, general education teachers, parents, instructional assistants, and speech-language pathologists. Participants came from a variety of school districts and inclusion teams, and all were working in full inclusion programs serving AAC users. These programs were defined as full inclusion because the students with disabilities were full-time members of age-appropriate classrooms in their home schools. In addition, all programs included special education services to support the focus students' participation in both the learning and the social communities of their peers. The delivery of special education services ranged from pull-out to classroom-based intervention models, depending on school district policies and practices. The team members had supported a total of 86 students in full inclusion classrooms using a variety of low- and high-technology AAC systems. The students' placements included elementary, middle, and high school programs. In total, there were six school districts represented by the participants. As shown in Table 1, the groups ranged in size from four to seven participants (Greenbaum, 1993; Krueger, 1994; Morgan, 1988, 1993). Table 1 also summarizes the participants' demographic information.

Focus Group Meetings

The purpose of the five focus groups was for the individual team members to express their opinions on critical issues regarding the inclusive education of students with AAC needs. As noted by Krueger, a recognized expert on focus groups, "the focus group helps people hear themselves and receive feedback from their peers" (Krueger, 1994, p. 239). Three members of the research team participated in a 3-day training session delivered by a nationally recognized focus group expert (Krueger) on (a) focus group procedures, (b) development of interview questions, and (c) analysis of focus group data.

All focus groups participated in one semistructured group interview that ranged from 60 to 90 minutes. A moderator (the first author) used a nondirective interview guide or questioning route to stimulate participants' involvement in the discussion (Krueger, 1998a). In addition, the moderator used group facili-

TABLE 1: **Demographic Characteristics of Focus Group Participants**

Demographic Variable	*Participant Group*				
	Integration Support Teachers (n = 7)	*Parents (n = 4)*	*Speech-Language Pathologists (n = 7)*	*Classroom Teachers (n = 6)*	*Instructional Assistants (n = 6)*
Age					
25–35	3	0	1	0	3
36–45	3	2	2	5	2
46–55	1	2	4	1	1
Gender					
Female	7	3	7	5	6
Male	0	1	0	1	0
Ethnicity					
European American	5	4	7	4	3
Asian American	2	0	0	0	0
Hispanic American	0	0	0	2	2
African American	0	0	0	0	1
Years of experience with AAC					
3–5	3	1	2	5	3
6–10	3	3	3	1	3
11 or more	1	0	2	0	0

tation strategies such as probes to obtain additional information, request clarifications, and encourage the active participation of all participants.

Focus group meetings began with a brief introduction by the moderator to clarify the purpose of the interview, outline the ground rules, and set the tone for the meeting (Krueger, 1998b). The introduction was followed by six questions, including an "icebreaker," four content questions, and a wrap-up question inviting all participants to identify what each felt to be the most critical point of the evening's discussion. The following four content questions were designed to elicit opinions from the focus group members on factors and skills that contributed to the successful social and academic inclusion of students with AAC needs:

- In your experience, what does successful inclusion of students who use AAC look like?
- What are the barriers that may limit access to such a successful experience?
- What are the most important skills that inclusion team members need in order to make the inclusion of AAC-using students possible?
- What are the positive outcomes that you have seen as a result of the inclusion of students who use AAC?

The second author served as assistant moderator during all five focus group interviews. The assistant moderator developed a summary throughout each focus group of key points made by participants, as well as notable quotations. She shared the summary with the group during a 3- to 4-minute period at the end of each focus group and concluded by asking whether the summary was accurate and whether any major points had been omitted. All focus group discussions were audiotaped and transcribed verbatim for later analysis. The meetings took place at the homes of two of the research team members and the library of a public school. As is customary in focus group research, participants were given a small honorarium for participating in the discussions (Krueger, 1998a). A third member of the research team was in charge of setting up the recording equipment and the refreshments. Both the assistant moderator and a third researcher sat outside of the focus group circle to avoid influencing the group members.

After participants departed, the moderator conducted a debriefing with the assistant moderator and the other research team member who had observed the discussion. The purpose of the debriefing was threefold: (a) to review from multiple perspectives the major points that were made, (b) to identify differences between groups, and (c) to note unexpected responses.

Data Analysis

The focus group transcripts were analyzed to identify the participants' opinions regarding critical issues

in the inclusive education of students with AAC needs. Themes common to all focus groups, as well as themes unique to specific focus groups, were identified.

Procedures

A content analysis was conducted in two phases, using a method outlined by Strauss and Corbin (1990). During the first phase, the five members of the research team worked independently to identify each statement from the focus group transcripts that indicated an opinion relevant to the focus questions under examination. The statements were then placed under the specific question headings to which they belonged: (a) indicators of success, (b) necessary skills, (c) barriers to inclusion, and (d) positive outcomes. Opinion statements were labeled according to the critical issue they addressed (e.g., regular team meetings, flexibility of role boundaries as indicators of success). Finally, team members compiled lists of critical issues based on their independent analyses, noting only those issues that were mentioned across all focus groups.

During the second phase of analysis, the entire team met to compare results. A master list of critical issues was produced by identifying those issues that appeared across each of the independently generated lists (Strauss & Corbin, 1990). Any differences between the independently generated lists were resolved via team consensus. The master list was then used to identify emergent subthemes, that is, clusters of items that seemed to group together under a common theme (e.g., collaborative teaming as an indicator of success) (Strauss & Corbin, 1990).

Verification and Validation

As recommended by focus group researchers (Krueger, 1998c), a number of procedures were included in the study to ensure that the findings were a valid representation of the participants' opinions related to the inclusive education of students with AAC needs. First, each of the five focus groups was designed to represent one of the major professional perspectives making up the student's educational team (e.g., speech-language pathologists, general education teachers, parents), thereby ensuring that discussions across focus groups captured multiple perspectives. Second, at the end of each focus group, the assistant moderator provided a summary of the major points throughout the discussion, giving the participants an opportunity to suggest revisions and/or additions and giving the researchers an opportunity to verify that they were accurately "hearing" what participants were saying. Third, the focus group transcripts were independently analyzed by the five members of the research team, thereby reducing the potential for bias from a single perspective. Finally, a member check was held after the data had been analyzed and synthesized. Participants in the original focus groups were invited to attend a follow-up meeting to review the initial findings, confirm their overall accuracy, and make suggestions for revision and interpretation. Several minor suggestions in terms of word choices were made and have been incorporated into the final report.

RESULTS

The four content questions yielded a number of themes that participants in all five focus groups believed were critical for the inclusion of students with AAC needs in general education programs. The themes were grouped by research team consensus under one of the four major thematic headings: (a) indicators of success, (b) barriers to a successful program, (c) necessary skills to support the inclusive effort, and (d) positive outcomes of inclusion.

Indicators of Success

Participants in all focus groups cited a number of key indicators of successful inclusive programs. These were (a) ownership by the general education teacher of the focus student, (b) collaborative teaming, (c) appropriate training for those involved, (d) presence of an effective instructional assistant, (e) natural supports from classmates, (f) social interactions between the focus student and peers both in and out of school, (g) academic participation of the focus student, (h) successful use of the device by the focus student, (i) services and supports being in place, (j) focus student membership and belonging, (k) classroom structure supporting the learning and participation of heterogeneous groups of students, (l) philosophical support of inclusive education at the district level, and (m) adequate classroom support. Table 2 shows the subthemes that emerged for each of the above themes.

The following are typical comments by the focus group participants:

> *I think some of the most successful years we've had are when the classroom teacher really buys in, when that teacher sees your student as their student and really welcomes them.* (parent)

> *I think successful inclusion takes a good team where everyone talks a lot about what needs to be done, and there are a lot of people who are filling in the gaps and supporting.* (speech-language pathologist)

> *Well, I think the training of the staff is the most crucial thing in the world.* (inclusion specialist)

> *I really think it takes a strong instructional assistant, 'cause they're the ones in the trenches all day long.* (instructional assistant)

TABLE 2: **Themes and Subthemes that Emerged for Indicators of Success**

- Ownership by general education teacher of the focus student
  - Is knowledgeable of device
  - Takes pride in student's progress
  - Is receptive to student's presence
  - Adapts curriculum
  - "Talks" with student
  - Identifies natural opportunities for student's participation
  - Creates opportunities for student's participation
- Collaborative teaming
  - Well-trained team members
  - Regular team meetings
  - Commitment to inclusion by team members
  - Establishment of common goals
  - Flexibility in role boundaries
  - Identification of a team leader
  - Maintenance of accountability
  - Action-oriented outcomes
  - Good interpersonal skills
  - Knowledgeable of AAC
  - Clear identification of roles and responsibilities
  - Long-term planning
  - Inclusion of parents, general education teacher, instructional assistant, inclusion support teacher, and other related professionals on an equal footing
- Appropriate training
  - Technology skills
  - Curriculum modification
  - Intervention and instructional strategies
  - Social support
  - Physical care
  - Core curriculum
- Effective instructional assistant
  - Well trained
  - Has a clear job description
  - Well compensated
  - Benefits from job security and continuity
  - Has a voice in team decisions
  - Is involved in decision making
  - Is able to attend team meetings
- Natural supports from classmates
  - To assist in the maintenance of device
  - To develop adaptations
  - To make recommendations for vocabulary
- Social interactions between focus student and peers
  - Peer awareness of the student's disability
  - Understanding of the AAC system as the student's own voice
  - Student-student interactions independent of adult facilitation
  - Out-of-school play dates
- Academic participation
  - Evidence of academic goals in Individualized Education Program
  - Evidence of curriculum modifications
  - Evidence of curriculum participation on device
- Successful use of AAC device
  - Student uses the device independently
  - Student self-asserts with the device
  - Student collaborates in managing own device
  - Student uses the device with peers
  - Student uses the device across the day
  - Student uses the device across settings, including home
  - Student has updated/motivating vocabulary available to him/her
  - Entire AAC system is integrated (e.g., computer, device, low technology)
  - System is maintained
  - Vocabulary allows for participation in curriculum
- Services and supports in place (district/administrative level)
  - Adequate resources provided by district
  - Manageable caseload for special educational personnel
  - Time and money for training, meetings, preparatory time to develop adaptations
  - Funding for technology
  - Long-term and transition planning
  - Collaboration with unions
  - General education input into personal placement decisions
  - Streamlining of process for acquiring/maintaining technology
- Focus student membership and belonging
  - Student is happy and thriving
  - Student is accepted and has friends
  - School community embraces differences/diversity
  - School community advocates for student
  - Student is not physically marginalized
- Classroom structure supports learning and participation
  - Use of cooperative learning strategies
  - Activities to build community in classroom
  - Team teaching with inclusion teacher
- Philosophical support of inclusive education at the district level
  - Merging of special education and general education
- Adequate classroom support
  - Inclusion specialist is responsive to student and classroom needs, supervises and trains the instructional assistant, and prepares curriculum adaptations
  - Frequent and regular communication between teacher and aide
  - Presence of effective instructional aide
  - Continuity of support team
  - Adequate staffing

Barriers to a Successful Program

Most barriers mentioned by the participants were the inverse of the indicators of success, such as (a) lack of training for those involved, (b) staff turnover, (c) lack of support from administration, (d) no time for collaborative meetings, (e) rigid understanding of professional roles, (f) unmanageable caseloads, (g) overreliance on the instructional assistant, (h) lack of opportunities for the focus student's academic participation, (i) classroom structure that marginalizes the focus student, and (j) lack of transition planning.

Participants also mentioned a number of barriers that were associated with the use of AAC technology. Such barriers were (a) team members' "technophobia," (b) constant breakdown of equipment, (c) lack of funding for devices, (d) lack of availability of "loaners" (e.g., AAC devices that could be used on a trial or emergency basis), and (e) limits of AAC technology with regard to conveying humor, anger, and other aspects of the focus student's personality.

Finally, participants noted a number of barriers that were related to the attitudes of those involved in creating an inclusive program. These were (a) discomfort with or fear of disability, (b) low morale, (c) personal insecurity, (d) fear of failure, and (e) feeling that one's contributions were undervalued by other members of the educational team.

The following are typical comments by the focus group participants:

If [staff] don't have more exposure to the communication system and have some key maintenance points—both system and vocabulary maintenance—then they feel like they can't handle what comes up. (inclusion specialist)

Another barrier is when you have any level of staff who are not fully cooperative or supportive or interested. So the principal to some extent, certainly the classroom teacher to a large extent, 'higher-up' officials in the special education bureaucracy who may not be interested—these people can sabotage a program, or if not consciously sabotage a program, make things not work that well. (parent)

I think another huge problem lies along the lines of support and the high rollover in staff. (instructional assistant)

We've just had a lot of problems with instructional assistants, and if that's not in place, and if that's not working, then everything sort of falls apart. (parent)

There are no funds for technology. (speech-language pathologist)

Necessary Skills

Participants in all groups most often cited two types of skills: attitudinal and practical (for an extensive discussion on professional skills needed to serve students with AAC needs in inclusive classrooms, see Soto, Müller, Hunt, & Goetz, 2001). Attitudinal skills included creativity, spontaneity, open mindedness, an interest in learning, a willingness to take risks, enthusiasm, initiative, self-confidence, patience, flexibility, a willingness to suspend judgment, persistence, sense of humor, likability, humility, and a strong commitment to inclusion. Participants also mentioned a number of practical skills that they felt were necessary to support students with AAC needs in full inclusion programs. These included (a) collaborative teaming, (b) providing access to the curriculum, (c) cultivating social supports, (d) AAC system maintenance and operation, and (e) creating classroom structures that support the learning of heterogeneous groups of students.

The following are typical comments by the focus group participants:

The foundation for all of this is receptive attitude, just open attitude by every member of the team. (parent)

[Team members] need to have organizational skills, and they also need to have communication skills and team-building skills. The ability to work with colleagues without letting your ego or your old histories get in the way. (parent)

This may be really obvious, but I think you have to be able to get along with kids. I mean, not just the special-ed kids, but somehow make yourself and the student attractive to other kids—to be able to figure out what's 'cool.' (speech-language pathologist)

One thing I think that's important for all members of the team is to be able to see opportunities to use the system. And that means being aware of how the systems can be used within the curriculum, how it's gonna be used in a social context, [and] how it could be used at home. (inclusion specialist)

Another skill which I think is really, really difficult to teach people is . . . how to support interactions between kids without yourself being a major player in the interaction (speech-language pathologist)

Positive Outcomes of Inclusion

Participants across all groups cited a number of positive outcomes of inclusive education for focus students and their peers, the parents of both the focus student and their peers, the classroom teacher, and the overall program. The existence of separate and distinct benefits for each of the five groups thus emerged as major themes. Table 3 summarizes the subthemes that emerged for each group of people:

The following are typical comments made by the focus group participants:

The success, looking at the [focus] child, would be that they feel really good about themselves and proud of their work, and proud of having friends, ... that they're not 'disabled' or 'not as good as'—that they don't get those kinds of messages from the teachers or other students, so they come out of it feeling ready for the next grade, and ready for the challenge, and proud of what they can do. (speech-language pathologist)

Kids have access to, and actually ... learn some of the concepts that are in the general education curriculum. Where I don't think that happens very much outside of inclusion. (speech-language pathologist)

[Focus] kids see themselves as real members of the class, as peers in the classroom, not as visitors. (speech-language pathologist)

I think the benefits really spread to the other [nondisabled] kids, too, because we're getting a lot of kids who are from different countries coming into the classroom, and ... obviously English isn't their first language. And the peers of the included students especially try to include that new student ... And they'll be more patient finding ways to try to communicate with someone who has a different way of communicating. (inclusion specialist)

[Inclusion] allows students who don't usually achieve well in a class, and especially in academics, to become tutors and teachers. And it's great. (instructional assistant)

Individual Group Analysis

Certain themes were specific to only one or two focus groups, reflecting the unique perspective and role played by each group in providing support to students with AAC needs. Additionally, although some themes were common to all focus groups, they were more strongly emphasized by only one or two groups. The following section compares these cross-group differences.

Parents

More than other focus groups, parents measured the success of an inclusive program according to how well it met their child's social and emotional needs. For instance, all participating parents looked to their child's happiness and overall well-being as a key indicator of a successful inclusion program, and three of four stated that their child's social inclusion was more important than his or her academic inclusion. Parents of focus children also cited the emotional support that they themselves received from other parents as one of the positive outcomes of inclusive education. Finally, parents stated that inclusive education

TABLE 3: **Major Themes and Subthemes That Emerged for Positive Outcomes**

For focus student
Being perceived as more capable, a normal individual
Higher expectations for academic achievement
Increase in independence and assertiveness
Receiving natural support from classmates
Belonging in the classroom, school, community, and community at large
Being a contributing member
Better prepared for a postschool life
Increased academic achievement: literacy, core curriculum, stimulation, academic challenges
Increased social opportunities
Increased opportunities for communication that results in improved communication skills and language development
For peers
Learning to communicate with AAC users
Learning to facilitate communication among kids with communication differences
Developing acceptance of human difference
Learning by teaching
Increased academic achievement
Learning of assistive technology
For parents of focus student
Development of relationships with other parents of classmates that results in shared experiences
Higher expectations from the child and from the system
Benefit from acceptance and enthusiasm about their child
Empowered by the inclusive community
For parents of peers
Realize the benefits of inclusive education through their children
Overcome skepticism toward inclusive education
For teachers
Develops skills to make adaptations that benefit all
Increases expectations for the child with a disability as well as children at risk
Overcomes the skepticism of inclusion
Develops a student-centered approach rather than a curriculum-driven approach to teaching
Learns to access available resources
For overall classroom program
Blurring of boundaries between special education and general education
Creating a community where all students belong
Trying new things and innovation
Encouraging an emphasis on individual progress rather than on competition
Overcoming fear of disability

empowered them to expect more from the educational system and to demand more in the way of appropriate services and supports for their children.

When citing necessary skills, parents focused less on specific instructional strategies and more on overall competencies and attitudinal characteristics (e.g., patience, flexibility, and the ability to work well with others).

The following are typical comments from parents:

Well, I think my first indication [of success] is my daughter. Is she happy? Is she thriving? Is she growing? Is she meeting her educational needs?

Although my son's expectations I don't think are necessarily increased, mine and my wife's are in terms of what we demand should be happening on a daily basis, and in terms of our son's educational career.

The school is part of getting [my son] out of the closet. Like, things that I'm still self-conscious about ... like at a library presentation, his noise. Or in an audience somewhere. But knowing that that happens at school all the time gives me the encouragement to say 'Okay, it happens here: we can try this in another setting.'

Instructional Assistants

Like parents, instructional assistants tended to measure successful inclusion in terms of the individual focus student rather than in terms of the classroom as a whole and to use personal anecdotes to illustrate their points. For instance, instructional assistants provided examples of focus students' increased autonomy, independence, and self-advocacy skills as indicators of success. Instructional assistants were also the only focus group to cite a decrease in the focus student's challenging behaviors as evidence of a successful program.

The following are typical comments from instructional assistants:

I work with a little boy right now who's becoming more and more independent, and he's getting to the point where he's telling me to 'Go away.' So that's when I know [inclusion] is working—when he says to me 'Hey, I don't need you anymore for this.'

[Successful inclusion is] when our kids advocate for themselves and make themselves heard, and make themselves participate on their own as much as they can.

I was thinking of a kid I used to work with. He used to scream a lot. And I think when he was able to communicate some things, some of his screaming stopped.

Although all five focus groups agreed that an effective instructional assistant was necessary for the successful inclusion of students with AAC needs, the instructional assistants spent more time than any other group articulating the numerous barriers to inclusion that they felt were related to the low status accorded to them within the educational system. Instructional assistants cited (a) poor working conditions, (b) lack of financial remuneration for participating in IEP meetings, (c) poorly defined union policies, (d) lack of preparation time, (e) inadequate training and support from inclusion specialists, (f) misunderstandings between general education teachers and inclusion specialists as to appropriate roles and responsibilities (e.g., whether the instructional assistant should be photocopying), and (g) having no "voice" within the system. Significantly, instructional assistants were the only focus group that did not emphasize collaborative teaming as evidence of a successful inclusive program.

The following are typical quotations relating to their status as instructional assistants:

Oh, [as an instructional assistant] you're just like a cockroach in the district. You don't exist. You have no voice. You have no say.

For instructional assistants to have a voice, and be able to say 'You know, this isn't working,' and for us not to be blown off. I think that's very important.

Having the time to meet, and instructional assistants getting paid for the time to meet, and instructional assistants getting prep time.

General Education Teachers

When citing positive outcomes of a successful program, general education teachers placed less emphasis on the individual focus student and more emphasis on the classroom-wide benefits of inclusive education. For instance, general education teachers noted that (a) curriculum modifications designed for focus students also benefited other students, (b) inclusive education encouraged all students to be less competitive and to focus instead on achieving their "personal best," and (c) inclusive education helped to build stronger classroom communities. Although all focus groups mentioned the benefits of inclusive education for the focus students' nondisabled peers (e.g., increased sensitivity), general education teachers also stressed the benefits of inclusive education for the parents of nondisabled peers. They noted that, not infrequently, parents of children without disabilities seemed to be more accepting of difference and more appreciative of what their own children could learn from students with disabilities:

[With inclusion] there's no longer that 'Oh, I might be considered one of the worst kids.' It's everyone trying their best, whatever that is, and there's no longer any sort of mark that maybe I have to reach. It's just 'He's trying his best and I'm just trying my best.'

Parents [of nondisabled students] are amazing, where sometimes they come in skeptical that this child should be included with their children and move from 'Are you going to spend more time with this child than with my kid?' and this kind of thing, to realizing the strengths of the [inclusion] program, and the fact that this child has so much to offer.

As far as necessary skills were concerned, general education teachers were the only group to list the importance of a student-centered classroom management style (e.g., team teaching, group activities). Unlike the instructional assistants, however, general education teachers did not emphasize as necessary competencies either the ability to facilitate the focus student's independence or to provide unobtrusive supports.

Speech-Language Pathologists

Speech-language pathologists tended to use a more clinical vocabulary in their responses to focus group questions and to be less anecdotal in their narrative style. Several indicators of success that only speech-language pathologists cited included (a) satisfaction on the part of the focus student's parents, (b) physical integration of the student within the classroom (e.g., centrally situated rather than located at the edge of the room), (c) IEP goals that reflected the "whole" student, and (d) communication goals that reflected an understanding of language development.

As far as barriers to success, speech-language pathologists cited the fact that teachers, parents, and administrators often expected them to provide traditional pullout services (i.e., services that they perceived as being incompatible with inclusive programming). Speech-language pathologists felt that they could more effectively carry out their professional responsibilities if the rest of the educational team saw them as "communication therapists" whose job it is to work within the classroom (rather than outside of it) to train the focus student's teachers, instructional assistant, and peers to be better conversation partners. Typical comments in this regard included the following:

In some ways, for some users, you might be teaching specific skills and strategies. And sometimes that's maybe done better in a pullout for a little while. But for functional communication, [students] have to be where the action is. And that's not the speech room.

Well, I think in some ways we're working under that dinosaur model of the speech therapist. We're 'communication therapists,' and I keep telling this to parents, hoping they'll start to get it.

Significantly, whereas general education teachers and parents tended to place more responsibility on the instructional assistant as the key support persor speech-language pathologists tended to place mor responsibility on the general education teacher.

Inclusion Specialists

A high level of overlap was noted between the inclu sion specialists' responses and those of other focu groups. Inclusion specialists' responses were exter sive and revealed an understanding of multiple pe spectives (e.g., those of the focus student and thos of the classroom as a whole). Responses also ind cated (a) familiarity with effective assessment an curriculum adaptation strategies, (b) experience wit collaborative teaming, and (c) the ability to identii whether the focus student's inclusion program wa working well (e.g., focus student using AAC syste throughout the day and across environments, con municating independently, receiving natural sup ports).

DISCUSSION

Participants in the five focus groups offered the perspectives on the skills, processes, and structure that promoted the inclusion of students with AA needs in general education classrooms as well as c the outcomes of inclusive education for all of thos involved. The dominant theme across all focus grou discussions was the participants' recognition of th fact that inclusive education of students with AA needs is possible and desirable. Teachers, parent instructional assistants, and speech-language patho ogists all mentioned the academic and social benefi of inclusive education not only for the focus studen but also for their peers, parents, and the school cor munity at large. Three themes, however, emerge strongly across all groups as prerequisite condition for a successful inclusive effort: administrative su port, AAC training, and team collaboration. All foci groups strongly expressed the need for support fro the administration when educating students with AA needs in general education classrooms, including tin and resources for training, preparation of curricul adaptations, and collaborative teaming. These fin ings are consistent with recent literature that esta lishes collaborative teaming as one of the most cri cal components of quality inclusive schoolir (Giangreco, 2000).

All focus groups emphasized the importance of c laborative teaming in the form of regular team mee ings where members develop action-based strategi for mutually defined goals. Accountability, strong lea ership, and interpersonal skills were some of th descriptors of a functional team, along with training AAC. Due to the specialized technological deman of the communication systems used by students w rely on AAC for participation, appropriate training all team members, focus students, and pee

emerged as a very important theme across all groups. Participants reported the need for adequate training not only with regard to the technical skills associated with the operation and maintenance of an AAC system but also on the strategies necessary for enabling students to use their devices as tools for accessing the curriculum and participating socially.

In terms of the cross-group comparisons, one of the most dramatic differences was in how specific groups defined successful inclusion, whether in terms of the individual focus student or in terms of the classroom as a whole. Responses seemed to be closely tied to individuals' professional roles. For instance, team members who spend most of their time working one on one with the focus students (e.g., instructional assistants and parents) tended to focus more specifically on students' well-being as a major indicator of success. General education teachers, on the other hand, who are responsible for managing an entire classroom, placed much less emphasis on the individual student and were more likely to stress the classroom-wide benefits of inclusive education. Finally, speech-language pathologists and inclusion specialists, who work with a variety of focus students in a variety of classroom environments, tended to take a more ecologic perspective, looking at how the needs of the individual student can effectively be woven into the fabric of the classroom as a whole.

A second meaningful cross-group difference had to do with the way in which separate focus groups perceived one another's professional roles and responsibilities. Although groups tended to cite the same necessary skills and competencies, they differed as to which team member they felt was responsible for performing particular tasks (e.g., the instructional assistant versus the general education teacher or the instructional assistant versus the inclusion specialist). During the general education teachers' focus group interview, different participants expressed different points of view, with one teacher stating that the instructional assistant should be responsible for curriculum adaptation and another stating that curriculum adaptation should be the sole responsibility of the classroom teacher. Although expected, differences of opinion about role boundaries and responsibilities could be sources of potential conflict and should be resolved on a team-by-team basis (Giangreco, 2000). Again, team meetings should provide an opportunity for team members to (a) design action plans in collaboration with one another, (b) frankly discuss any disagreements, and (c) make decisions based on what the team agrees is in the best interest of the focus student (Rainforth, York, & McDonald, 1992). Action plans clearly identify each team member's specific responsibilities and thus strengthen team members' accountability.

The roles and responsibilities of the instructional assistant and other members of the educational team are further complicated by the issue of professional status. Instructional assistants repeatedly stressed a deep-seated frustration with their "lowly" position within the educational hierarchy. Many reported not feeling respected or "heard" by the administration or other members of the educational team, such as when meetings are scheduled at a time when instructional assistants could not participate or receive financial remuneration. Nevertheless, all focus groups reported that well-trained and enthusiastic instructional assistants are an essential part of any successful inclusion program. Again, these findings suggest that teams need to be structured in a way that enables instructional assistants to contribute their ideas and suggestions on an equal footing with other team members.

A final cross-group difference had to do with how different team members perceived the goals of inclusive education. In almost all cases, focus groups were in agreement. Instructional assistants, however, stressed the importance of enabling the focus student to be more independent and autonomous and to function with either "natural" or "unobtrusive" supports from adaptations, classmates, or general education teachers. In other words, the role of the instructional assistant becomes one of ensuring that needed adaptations and supports are in place, prompting participation and expanding the students' sphere of support to include other students in the classroom (Coots, Bishop, Grenot-Scheyer, & Falvey, 1995).

When interpreting the results, it is important to keep in mind the limitations of this study, which relate mainly to the size and characteristic of the sample. Participants in our focus groups work in primarily urban school districts with very limited resources. Additionally, they belonged to school districts that represent different service delivery policies for inclusive classrooms. Obviously, different service delivery models and limited resources could have influenced the study participants' perceptions, and further research in the area of inclusive education for AAC-using students is therefore needed. It is also essential to explore in the near future the perspectives of AAC users themselves—particularly those who have been educated within the context of inclusive education programs.

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AAC Augmentative and Alternative Communication

Collaborative Teaming to Support Students with Augmentative and Alternative Communication Needs in General Education Classrooms

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This study evaluated the effectiveness of the use of a team collaboration process to increase the academic achievement and social participation of three students with augmentative and alternative communication (AAC) needs who were members of general education classrooms. Three educational teams, comprised of the general education teacher, inclusion support teacher, instructional assistant, speech-language pathologist, and one of the student's parents, developed and collaboratively implemented Unified Plans of Support for the students that consisted of academic adaptations and communication and social supports. The effectiveness of the support plans was evaluated through behavioral observations and team interviews. Evaluation outcomes suggest that consistent implementation of the plans of support by team members was associated with improvements in academic skills, social interactions with peers, engagement in classroom activities, and use by the students of a variety of AAC devices. Implications of the collaborative teaming process in supporting students with AAC needs in general education classrooms are discussed.

KEY WORDS: augmentative and alternative communication (AAC), collaborative teaming, inclusive education, parent participation

In recent years, inclusive education has emerged as a promising educational practice for teaching students with augmentative and alternative communication (AAC) needs (Erickson & Koppenhaver, 1998; Erickson, Koppenhaver, Yoder, & Nance, 1997; Koppenhaver, Spadorcia, & Erickson, 1998; Soto, Müller, Hunt, & Goetz, 2001a; Sturm, 1998). Inclusive education is based on the following beliefs and values: (a) all children can learn; (b) all children have the right to be educated with their peers in age-appropriate, heterogeneous classrooms within their neighborhood schools; and (c) it is the responsibility of the school community to meet the diverse educational needs of all of its students (Thousand & Villa, 1992).

The sharing of an inclusionary philosophy by all key stakeholders seems to be a necessary but not a sufficient condition for ensuring the adoption of this model (Nevin, Thousand, Paolucci-Whitcomb, & Villa, 1990). A considerable body of literature establishes that effective inclusive education for students with significant disabilities requires substantive changes in classroom structure, a different conceptualization of professional roles, and a continuous need for collaborative teaming (e.g., Gee, Graham, Sailor, & Goetz, 1995; Giangreco, 2000; Giangreco, Dennis, Cloninder, Edelman, & Schattman, 1993; Giangreco, Prelock, Reid, Dennis & Edelman, 1999; Hunt, Doering, Hirose-Hatae, Maier, & Goetz, in press; Hunt, Hirose-Hatae, Doering, Karasoff, & Goetz, 2000; Rainforth & York-Barr, 1997; Thousand & Villa, 1992; York-Barr, Schultz, Doyle, Kronberg, & Crossett, 1996).

Collaborative teaming has been defined as a group of individuals with diverse expertise working together to achieve mutually defined goals (Snell & Janney, 2000; Thousand & Villa, 1992). According to experts in the field of collaborative teaming, an effective collaborative teaming process involves regular, positive face-to-face interactions; a structure for addressing issues, performance, and monitoring; and clear individual accountability for agreed-on responsibilities (Nevin et al., 1990; Salisbury, Evans, & Palombaro, 1997; Thousand & Villa, 1992; West & Idol, 1990).

In the case of students who use AAC systems, the educational team must work together to integrate an often complex array of technologies used for learning, mobility, and classroom participation (Erickson & Koppenhaver, 1998; Erickson et al., 1997; Koppenhaver et al., 1998; Soto et al., 2001a; Sturm, 1998). The challenge of coordinating the contribution of all team members is heightened by the fact that, within the

inclusion model, the traditional roles and responsibilities of educational personnel are changing, and a number of team members may have overlapping functions (Giangreco, 2000). For instance, parents, classroom teachers, special educators, speech-language pathologists, assistive technology specialists, and paraprofessionals may all have important roles in teaching and supporting a wide range of communication and language skills. Additionally, inclusive practices require that the general curriculum and regular school activities become the context within which communication and language intervention targets are defined (Ehren, 2000). As such, educational personnel must now engage in collaborative consultation, curriculum-based intervention, and classroom-based services to support content learning.

In a recent study, Soto and her colleagues reported the results from five focus groups of team members who had been supporting students with AAC needs in inclusive classrooms for at least 3 years (Soto et al., 2001a). Participants in the five focus groups offered their perspectives on the skills, processes, and structures that promoted the inclusion of students with AAC needs in the general education classroom and on the outcomes of inclusive education for all of those involved. All focus groups emphasized the importance of collaborative teaming as a prerequisite condition for a successful inclusive effort. When describing what collaborative teaming meant to them, participants emphasized the importance of regular team meetings in which all team members contributed to the development of strategies and ideas for achieving mutually defined goals. Collaborative teaming skills were further defined as an understanding of the roles and responsibilities of all team members, combined with a willingness to be flexible around role boundaries. Accountability, strong leadership, and good interpersonal skills were some of the qualifications of a functional team, along with training in AAC. Participants reported the need for adequate training with regard to both the technical skills required to operate and maintain an AAC system and the strategies necessary to enable students to use an AAC device as a tool for accessing a curriculum and participating in social situations. These findings are consistent with current recommendations on best practices for collaborative teaming in inclusive classrooms (e.g., Giangreco, 2000).

Although there seems to be consensus on the importance of collaborative teaming in inclusive classrooms, little research has been conducted to examine the application of a collaborative teaming process and its effect on the social and academic participation of students with significant disabilities (Giangreco, 2000; Salisbury et al., 1997). The purpose of this study was to investigate the effectiveness of a collaborative teaming process on the social and academic participation of students with significant disabilities and AAC needs. This investigation builds on recommendations for best practices for collaborative teaming in inclusive classrooms outlined in the current literature. It differs from previous research in that the collaborative process described in this article provides a detailed and simplified process, called a Unified Plan of Support (UPS), that was designed to unify and integrate educational, communication, and social supports for students with AAC needs in regular classrooms. The main elements of the UPS process are (1) regularly scheduled team meetings, (2) development of supports to increase focus students' academic and social participation in general education instructional activities, (3) a built-in accountability system, and (4) flexibility to change ineffectual supports (Hunt et al., in press). Elements for effective collaborative teaming were incorporated into this model. Most importantly, team members collaborated to create and implement individualized instruction and supports needed to increase academic successes and social participation of the focus students. Each collaborative team included a general education teacher, inclusion support teacher, instructional assistant, each student's parent(s), and a speech-language pathologist who served as the AAC specialist.

Monthly meetings allowed for ongoing evaluation and revision of the students' UPS that were implemented through the cooperative efforts of all team members. Implementation strategies included general and special education co-teaching (Bauwens, Hourcade, & Friend, 1989), small-group and individual tutoring, and direct support from the special education teacher, AAC specialist, and instructional assistant. The roles and responsibilities of general and special educators included the flexibility required to jointly address the needs of all three of the students involved as the team members shared responsibility for the students' success.

This model of team collaboration was evaluated through multiple data sources that included behavioral observations and team interviews. Triangulation of data sources (Patton, 1990) provided the opportunity for behavioral data describing students' levels of engagement and social participation to be validated by team members' descriptions of the quality of the students' classroom participation.

METHOD

Setting

This study was conducted at two elementary schools located in two small, diverse school districts in the San Francisco Bay Area. The schools had included students with severe disabilities in general education classrooms for 10 and 11 years, respectively. The three students were supported in their kindergarten and first- and fifth-grade classes on a continuous basis by an instructional assistant. All three general education teachers had previous experience that included supporting children with severe

disabilities, but none of the teachers had worked with students with extensive AAC needs previously. Research activities began the first month of the school year and continued for 7 months.

Participants

Students

Minh was a grade 5 student who experienced severe physical and speech impairments caused by cerebral palsy. He had no use of his hands, arms, or legs. His visual and auditory abilities were in the normal range. Minh used a powered wheelchair accessed with a headswitch for mobility. He used a head light to point to an alphabet board and other low-technology AAC devices. He also used a Headmaster Plus™ (Prentke Romich Co.) and a single switch to access a laptop computer and a head mouse to access his dynamic display communication aid. In addition, Minh communicated through eye gaze and facial expressions. His receptive and expressive language comprehension skills were at the grade 1 and grade 3 levels, respectively, as reported by the team. He read at the first- to second-grade level.

Khamla was a kindergartner who experienced moderate physical and speech impairments caused by cerebral palsy. He walked with a slow, awkward gait and had full use of his arms. Khamla had been diagnosed with corneal clouding but did not use corrective lenses. He had no apparent hearing loss. At the beginning of the study, Khamla used some gestures and sign approximations to express his basic wants and needs. He had had previous exposure to picture symbols but was not using a picture symbol system. He used few intelligible words. Khamla appeared to have moderate cognitive delays, severe expressive language delays, and moderate receptive language delays as reported by the speech-language therapist.

Paolo was a student in grade 1 who experienced severe physical and speech impairments caused by cerebral palsy. His visual and auditory abilities appeared to be within the normal range. He used a manual wheelchair for mobility. Paolo had good gross motor use of his hands. He primarily used gestures, facial expressions, and vocalizations to communicate his wants and needs. He owned a dynamic display communication aid that he did not use functionally. His receptive vocabulary was assessed to be at 3.7 years using the Peabody Picture Vocabulary Test-Revised (Dunn & Dunn, 1981). Paolo was beginning to identify letters and letter sounds and was developing prekindergarten math skills.

Educational Teams

Three educational teams were recruited for the study from two school districts in which students with significant disabilities had been included in general education programs for several years. The districts were canvassed for elementary-level inclusion programs that supported students with AAC needs. All members of the three teams selected for the study supported the inclusion of students with disabilities in general education classes and expressed an interest in participating in the collaborative teaming process.

Five core members of the educational teams for each of the three students participated in the study. Core members are defined as those members who have substantial daily involvement with the student (Giangreco, 2000). The general education teacher, inclusion support teacher, instructional assistant, speech-language pathologist, and one of the student's parents developed, reviewed, and collaboratively implemented plans of support for each of the focus group students. Table 1 presents demographic information describing the educational team members including their ages, gender, ethnicity, and years of experience with AAC.

Intervention: Unified Plans of Support

Unified Plans of Support (Hunt et al., in press) were developed for Minh, Khamla, and Paolo through the collaborative efforts of their educational teams. The teams met once a month for approximately 1 hour and 30 minutes to develop and continue to refine the support plans. Each UPS included a listing of (a) curricular supports for reading, writing, and math (e.g., adapted materials and/or modified instructional content, performance requirements, or teaching methods; Janney & Snell, 2000); (b) communication supports to promote classroom participation (e.g., low-technology boards for commenting to classmates, voice output communication devices to support participation in classroom discussions, attention bells to indicate the desire to ask or answer questions); and (c) social supports to increase interaction with peers (e.g., partner systems, social facilitation by adults, small-group instruction, learning centers). Examples of the curricular, communication, and social supports developed and implemented for each of the three students appear in Table 2.

Curricular adaptations and modifications were designed to support the focus students' full participation in academic activities as they worked according to their individual levels of ability and to enable the students to rely less on individual supports from the instructional assistant. Communication and social supports were established to (a) decrease periods of nonengagement in classroom activities, (b) increase students' attempts to initiate communicative interactions in the context of instructional activities (e.g., asking questions, making comments, answering questions), and (c) increase interactions between the focus students and their classmates.

TABLE 1: Demographic Information of Study Participants

Group	N	Gender	Age (yr)			Ethnicity			AAC Experience (yr)		
			20–35	26–45	46–55	European-American	Asian-American	Hispanic-American	0–2	6–10	≥11
Inclusion support teachers	3	Female	1	2	0	1	2	0	0	2	1
Parents	3	Female	2	1	0	0	2	1	2	1	0
Speech-language pathologists	3	Female	2	1	0	3	0	0	2	0	1
Classroom teachers	3	Female	1	1	1	3	0	0	2	0	1
Instructional assistants	3	Female	1	1	1	2	0	1	3	0	0

Structure and Organization of the UPS Meetings

The structure of the collaborative process allowed members of the team to share their knowledge, experience, and skills. Each support item was developed through a process that included sharing ideas and building on the suggestions of others. The collaborative problem-solving process included four key elements: (a) identifying learning and social profiles for each of the focus students, (b) developing supports to increase the students' academic success and social participation in classroom activities, (c) collaborative implementation of the plans of support, and (d) a built-in accountability system (Giangreco, Cloninger, Dennis, & Edelman, 1994; Merritt & Culatta, 1998; Salisbury et al., 1997; West & Idol, 1990).

At the beginning of each student's first UPS meeting, members of the team reviewed the student's academic development with respect to reading, writing, and math. In addition, they described the extent and quality of each student's participation in classroom activities (e.g., contributing to group discussions, working without support from the instructional assistant, participating in large-group instruction, working collaboratively in small-group activities, seeking needed assistance) and interactions with classmates (e.g., initiating and responding to interactions, participating in conversations, providing and receiving assistance, working collaboratively). The initial support plan was built on that assessment information through a "brainstorming" and consensus process. Each item on the UPS was suggested by one or more members of the team, followed by a discussion of the effectiveness and feasibility of the support strategy. If the team members agreed on the inclusion of the item, it was added to the student's support plan.

The UPS form that guided the discussion (Fig. 1) listed each support item in the curricular areas of reading, writing, and math. Additional areas included general participation in classroom activities and communication and socialization with peers. A grid on the right side of the page was used to identify the team members responsible for implementing each support strategy. The grid also included a rating scale used each month to evaluate the extent to which each support item was being implemented (i.e., not at all, somewhat, moderately well, and fully). The monthly rating procedures prompted team members to implement items rated as somewhat implemented more rigorously and also provided the opportunity for them to discuss items that were not at all implemented. These latter items were often revised or deleted from the plan because they were perceived by team members to be ineffectual or impractical.

Based on team members' experience in implementing each UPS, individual items were sometimes refined, expanded on as learning occurred, deleted, or added to the plan during subsequent meetings. University members of the research team joined the school teams for monthly UPS meetings but did not participate in the development of the plans of support. They did, however, provide some feedback to members of the team during the days of observation and data collection.

Development of the UPS for Each Student

During the first UPS meetings to develop the initial plans of support, the project directors modeled the process. Following reviews of the students' abilities and needs in each of the areas described previously, members of the educational team were asked by the project directors to "brainstorm" educational and social supports for the students in the areas of reading, writing, math, communication with peers, and general participation in classroom activities. In subsequent meetings, the inclusion support teachers led the discussions to review the UPS, evaluate levels of implementation, add additional items, and refine or delete items that were included previously. Following the initial UPS meetings, members of the university team observed but did not contribute to the discussions.

TABLE 2: Sample of Items from Each Student's Unified Plan of Support

	Minh	*Khamla*	*Paolo*
Communication and participation	During whole class discussions, ask Minh to move to the front of the class (T, IA) Encourage Minh to use a bell to indicate that he wants to answer/ask questions (IA, S-LP) Ask open-ended questions and give Minh a chance to respond using a communication board or electronic device (T, IA, S-LP)	Teach Khamla to use a Big Mac, Cheap Talk, or a signed YES or NO to respond during group discussions (T, IT, IA, S-LP) Teach Khamla and his classmates two ASL signs a month during a weekly lesson; encourage them to use the signs throughout the day (All) Move Khamla to the front of the classroom when students are on the rug for a group activity (T, IA)	Pair Paolo with a classmate during "station" activities (T, IA) Teach Paolo to use low-technology communication boards as well as the Dynavox, Cheap Talk, and his voice to communicate with others at school and at home (All) Give Paolo a waist pack that contains pictures or souvenirs to share information about his day or weekend with his classmates, teacher, and/or family (All)
Reading	Create a template for the DynaMyte containing "carrier phrases" so that Minh can respond to questions related to books or short stories (T, IT, S-LP) Pair Minh with a classmate who will help him respond to science questions (T, S-LP)	During Zoo Phonics activities, teach Khamla targeted letter sounds using letter cover-up boards (T, IT, IA, P) Teach Khamla to use a picture story board to answer comprehension questions about simple picture books (T, IT, IA)	Teach Paolo one new letter sound each week during in-class or individual reading sessions and while reading at home (T, IT, IA, P) Teach Paolo to look at his book and speak at appropriate times during reading sessions (T, IA)
Writing	Provide Minh with Writing Blaster and a template on his desktop computer to use during daily journal-writing activities (IT, IA)	Pair Khamla with a classmate to complete his journal entry using Stories About Me; he chooses between two pictures to fill in blank spaces and points to each picture symbol as his partner reads the sentences (IT, IA)	Teach Paolo to find a letter on the computer keyboard in response to hearing the letter and/or letter sound (IT, IA)
Math	Provide Minh with adaptations for math activities or opportunities to work on functional math objectives using a CD-ROM (T, IA)	Pair Khamla with a classmate (i.e., cooperative learning) to create repeating patterns using manipulatives (T, IT, IA)	Teach Paolo to recognize numbers 1 though 5 using manipulatives, workbooks, and computer programs (All)

T = general education classroom teacher; IT = integration support teacher; IA = instructional aide; S-LP = speech-language pathologist; P = parent; All = all team members.

Student Performance Measures and Data Collection Procedures

Design

Student outcome variables were investigated using a combination of data gathering methods: (a) systematic observation of the levels of engagement and interaction patterns of the focus students using a multiple baseline design across students (Kazdin, 1982) and (b) team interviews to elicit team members' perspectives on students' academic growth and social participation. The three team interviews were conducted once during baseline (i.e., 1 week before implementation of the intervention) and twice during the intervention condition (i.e., 1 month after implementation of the intervention and at the end of the study).

Levels of Engagement and Interaction Patterns: Observational Measures

The Interaction and Engagement Scale (IES) (Hunt, Alwell, Farron-Davis, & Goetz, 1996; Hunt, Farron-

Unified Plan of Support (UPS)

Team Members Present:

Focus Student: _____ _____

School: _____ _____

Date: _____ _____

EDUCATIONAL SUPPORT For example: adaptations, curricular modifications, instructional modifications, peer supports.		
SUPPORTS	Person(s) Responsible	Implem. Rating
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
SOCIAL SUPPORT For example: "buddy systems," "circles of support," interactive media (communication systems, ed. materials, etc.), social facilitation.		
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all
		☐ fully ☐ mod. well ☐ somewhat ☐ not at all

Figure 1. Unified Plan of Support form.

Davis, Wrenn, Hirose-Hatae, & Goetz, 1997) was designed to measure interaction and engagement variables. The IES uses a partial interval recording procedure in which each 10-minute observational period consists of 20 30-second intervals; within each interval are 15 seconds for observation and 15 seconds for recording. A copy of the IES is available from the first author.

All four of the IES observers had previous experience with procedures for in-class data collection, and two of the four had used the IES to collect behavioral data in a previous study (i.e., Hunt et al., in press). Prior to implementation of the data collection process, the four observers reviewed the instrument as a group, after which all possible pairs of the four observers established inter-rater agreement of 90% or higher for each variable while observing students in two general education classrooms.

Data from IES observations can be analyzed in a variety of ways; however, with regard to the outcomes of this study, it was predicted that there would be (a) increases in interactions with peers that were neutral or positive in nature, (b) decreases in the levels of nonengagement in ongoing classroom activities, (c) increases in interactions initiated by the focus students (e.g., making comments, asking questions), and (d) increases in the use of an AAC device over time. Thus, IES data were recorded and analyzed to address these hypotheses. During each interval, the observer noted the first communicative interaction (e.g., speech or touching a symbol on a communication board to make a request or comment) that involved the focus student. The identity of the partner in that interaction (e.g., the teacher, another student, the instructional assistant) was also noted, as well as the individual who initiated the interaction (i.e., the focus student or the partner). The communicative function of the interaction (i.e., a request, protest, comment, or assistance) was identified as well as the quality of the interaction (i.e., positive, neutral, or negative) and the use of an AAC device. Engagement variables included the level of engagement (i.e., active, passive, or not engaged) and the grouping pattern (i.e., student alone or with a group) that occurred the majority of the time during each interval.

Each student was observed approximately once per week from September through March during a 2-hour session. Occasional disruptions of this schedule occurred because of holidays, special school events, and student absences. One classmate of each focus student was also observed using the same instrumentation and procedures. Classmate data were used to identify normative patterns for each of the dependent variables. Three participating classmates were selected by the general education teachers, who were asked by project staff to identify three boys in the class who were "average, socially and academically." One of the selected students was observed each session, and the order of observations of each of the three students was rotated across the weeks.

Ten 10-minute observations (five for the focus student and five for the classmate) were spaced across a 2-hour session, with each observation period separated by a 2-minute break. The observations were alternated between the focus student and his classmate, and the order in which students were observed was systematically rotated across sessions. The observational period was scheduled during morning academic activity and did not include recess breaks. Students in each of the three classrooms quickly adjusted to the presence of the data collectors, who were introduced by their teachers as visitors who would be observing in their classroom during the school year.

Additional data probes were inserted into Minh's data collection schedule during the last 3 months of the study. These probes were conducted for 2-hour periods during afternoon academic activities in response to team members' and data collectors' feedback that morning activities in his grade 5 classroom were structured to promote independent seatwork and participation in teacher-led class lessons and therefore did not provide contexts that supported demonstration of the targeted communication and social interaction variables.

Reliability

During baseline and after each UPS was implemented, an independent observer (one of the senior investigators) joined the data collectors for an average of 30% of the sessions (26% for Minh, 31% for Khamla, and 33% for Paolo). The level of agreement between the primary data collector and the independent observer was calculated by dividing the number of agreements on the occurrence of variables during each observational interval by the total number of agreements plus disagreements multiplied by 100. The mean percentage of interobserver agreement on the presence of the interaction and engagement variables targeted by the IES was 98% for communicative partner (range = 94–100%), 98% for initiation of an interaction (range = 91–100%), 97% for acknowledgment of the initiation (range = 91–100%), 96% for communicative function (range = 86–100%), 99% for use of an AAC device (range = 97–100%), 99% for the quality of the interaction (range = 94–100%), 96% for the level of engagement (range = 88–100%), and 100% for student grouping patterns. The overall percentage agreement across all subcategories was 98%.

Levels of Engagement, Interaction Patterns, and Academic Progress: Team Interviews

Team members' perceptions of changes in the social/classroom behaviors and the academic progress of the three focus students were assessed through open-ended interviews that were conducted three times during the course of the study: approximately 1 week before implementation of the UPS, 1 month after implementation of the UPS, and at the end of the study. During the interviews, team members were asked, "How is _____ doing?" with regard to each of the areas addressed by a UPS (i.e., reading, writing, math, classroom participation, and social interaction with peers). The responses were audiotaped and transcribed verbatim for later analysis.

Intervention Fidelity: Implementation of Items on the UPS

The extent to which items on the UPS were implemented (LeLaurin & Wolery, 1992) was evaluated during each monthly UPS meeting that followed development of the original support plan. Team members and university project staff who observed in the classroom were asked to rate the extent to which each item on the support plan was being implemented. As noted previously, rating options included not at all, somewhat, moderately well, and fully. A consensus process was used in which each of the educational team members and the university observers reported their ratings for each item. All members of the team then agreed on a single implementation rating for each UPS item across each of the monthly meetings; had it not been possible to reach consensus, the majority opinion would have been used to rate an item.

Ecological Validity of the UPS Process: Participants' Perspectives

The ecological validity of the UPS process—the extent to which the collaborative teaming process fit into the existing school culture and was useful to the school community (Gaylord-Ross, 1979)—was evaluated through a group interview conducted at the end of the study. Questions were designed to elicit perceptions of the UPS process for the following topics: (a) benefits of the UPS process, (b) limitations of the process, and (c) recommendations for changes in the process. The group interview was moderated by a senior investigator who encouraged speakers to clarify or expand on their responses when necessary. The responses of the team members were audiotaped and transcribed verbatim for later analysis.

Data Analysis

Behavioral Measures

At the end of each observational session, data collectors summarized for each of three students and their classmates the percentage of total intervals of observation (there were 5 sets of 20 intervals for each student) in which the following targeted behaviors occurred: reciprocal interactions with other students, nonengagement, focus student–initiated reciprocal interactions (i.e., requests, protests, comments), and use of an AAC device. The percentage of intervals in which assistance was provided by the instructional assistant was also recorded.

Interviews

Using a group discussion and consensus process, the five members of the university team analyzed the transcripts from each of the interviews conducted during three UPS meetings. Team members read each interview transcript and, using a line-by-line analysis (Strauss & Corbin, 1990), identified themes representing the perceptions of the interviewees within the categories of reading, writing, math, classroom participation, and social interaction with peers. A discussion of agreements and discrepancies in the analyses across team members followed. A summary listing of themes within each category for each of the three interviews (i.e., pre-UPS, 1 month following UPS initiation, and at the end of the study) was developed. Finally, team members reviewed the identified themes to eliminate redundancy and to identify and interpret patterns across categories, interview periods, and stu-

dents (Krueger, 1998; Morgan, 1993). Each member of the three educational teams provided "member checks" of the accuracy of the analysis by reviewing the outcomes and providing feedback (Lincoln & Guba, 1985).

The same procedures were also used to analyze the transcripts of educational team interviews conducted at the end of the study to establish the ecological validity of the intervention. Categories for the initial analysis corresponded to the structure of the interview questions. "Member checks" of the accuracy of the final analysis were provided to all members of the three educational teams.

RESULTS

Student Outcomes: Levels of Engagement and Interaction Patterns

Observational Outcomes

Before implementation of the UPS for Minh, Khamla, and Paolo, the percentage of intervals during which the students interacted with peers fell substantially below the average rates of interactions for their three classmates who were also observed. This is illustrated in Figure 2. Following implementation of the targeted academic and social supports, interaction levels increased from an average of 2%, 5.2%, and 8.7% for Minh, Khamla, and Paolo, respectively, to 26% for Minh (40.8% during the four afternoon probe sessions), 35.7% for Khamla, and 37% for Paolo. One-to-one interactions with classmates also increased from baseline levels that were well below the average rates for their classmates (i.e., 1% for Minh, 3.8% for Khamla, and 6.1% for Paolo) to 7.6% for Minh (29.5% during the afternoon probes), 21.4% for Khamla, and 17.9% for Paolo.

In addition to the substantial increases in interactions with classmates during observational sessions, the data presented in Figure 3 indicate that levels of nonengagement in classroom activities decreased dramatically for Khamla and Paolo. For all three students, levels of nonengagement decreased to levels consistent with those of their classmates, that is, from 8.3 to 2.5% for Minh (1.8% during afternoon probes), from 29 to 5.6% for Khamla, and from 17 to 3.9% for Paolo.

In addition to high levels of nonengagement during the baseline condition, there were very low levels of interactions initiated with the teacher or other students by Minh, Khamla, or Paolo (e.g., initiating making a comment during one-to-one interactions or during group discussions) (Fig. 4). After implementation of the UPS, initiation levels for Khamla and Paolo more closely matched those of their classmates. For Minh, initiations matched peer interaction patterns during only two of the morning observations but matched or exceeded peer data during three of the four afternoon

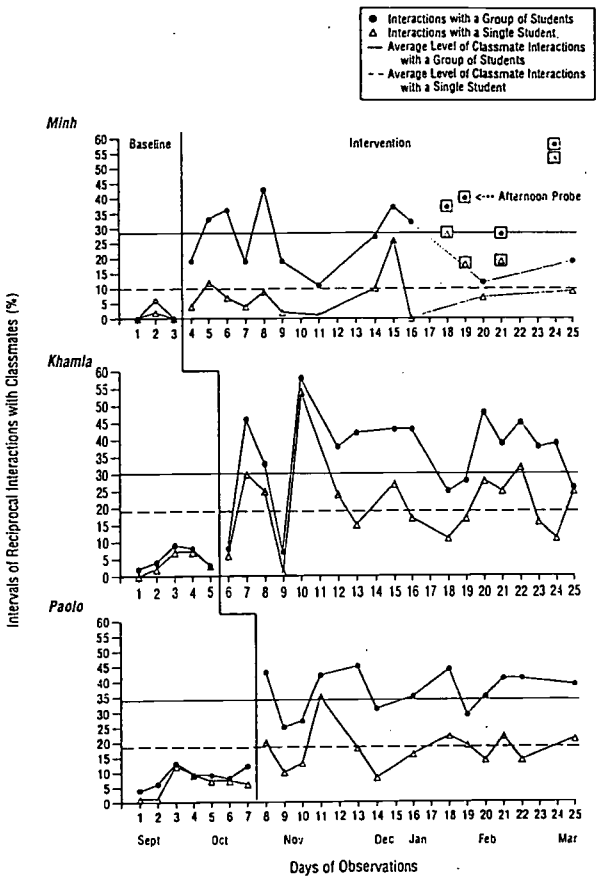

Figure 2. Percentage of intervals of reciprocal interactions with classmates in a group or individually.

probes. Initiated interactions increased from 0% during baseline to 3.5% (14.8% during afternoon probes) during the intervention condition for Minh, from 3.8 to 14.7% for Khamla, and from 5.7 to 12.2% for Paolo.

During the baseline condition, there were no instances of the use of either low- or high-technology AAC devices by Minh, Khamla, or Paolo. After implementation of the UPS, use of an AAC device during the session occurred an average of 9.2% of the time for Minh (22% during afternoon probes), 5.3% for Khamla, and 3.5% for Paolo (Fig. 5).

One explanation for the increases in communicative interactions and the decreases in nonengagement in classroom activities may have been that increased assistance was provided to the students by their special education instructional assistants after development of the UPS. However, analyses of the observational data for each student revealed that the percentage of intervals of assistance from instructional assistants actually decreased after implementation of the UPS, from 32.3% during baseline to 6.8% (3.5% during afternoon probes) during intervention for Minh, from 10.4 to 3.8% for Khamla, and from 13.9 to 5.6% for Paolo.

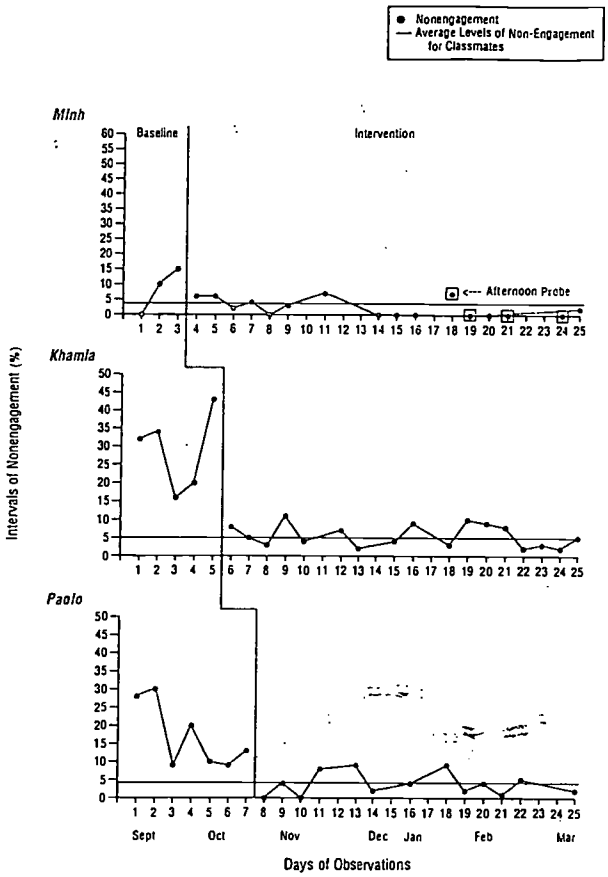

Figure 3. Percentage of intervals of nonengagement in ongoing classroom activities.

Interview Outcomes

During the first interview that was scheduled 1 week before implementation of the UPS, themes that were common to each of the students included low levels of active participation in classroom activities, restricted means of communication, difficulty maintaining interactions with peers, reliance on instructional assistants for support, and inconsistent attention to and interest in classroom activities. These themes are summarized in Table 3.

During the second interview conducted 1 month after implementation of the UPS, team members described more active participation in and attention to classroom activities and increased interactions with peers (see Table 3). During the final interview, substantial changes in student behavior were described, including increased independence, assertiveness, and confidence; more frequent interactions with peers; increased attention to and engagement in classroom activities; more frequent initiation of comments during class discussions; and increased proficiency using a variety of communication modes to interact with peers and participate in classroom activities (see Table 3).

Student Outcomes: Academic Performance

Interview Outcomes

Table 4 presents team member perspectives on Minh's, Khamla's, and Paolo's levels of academic performance. A review of the table reveals increases in academic performance and participation in the general education core curriculum as soon as 1 month after implementation of the UPS. At the end of the study, the three students had made substantial gains in the areas of reading, writing, and math.

Intervention Fidelity: Implementation of the UPS

Ratings related to the degree of implementation of the items in each student's support plan were gathered at the first meeting following development of the UPS (i.e., after approximately 1 month). The ratings can be summarized as follows: (a) 4 of the 9 supports for Minh were fully implemented, 2 were implemented

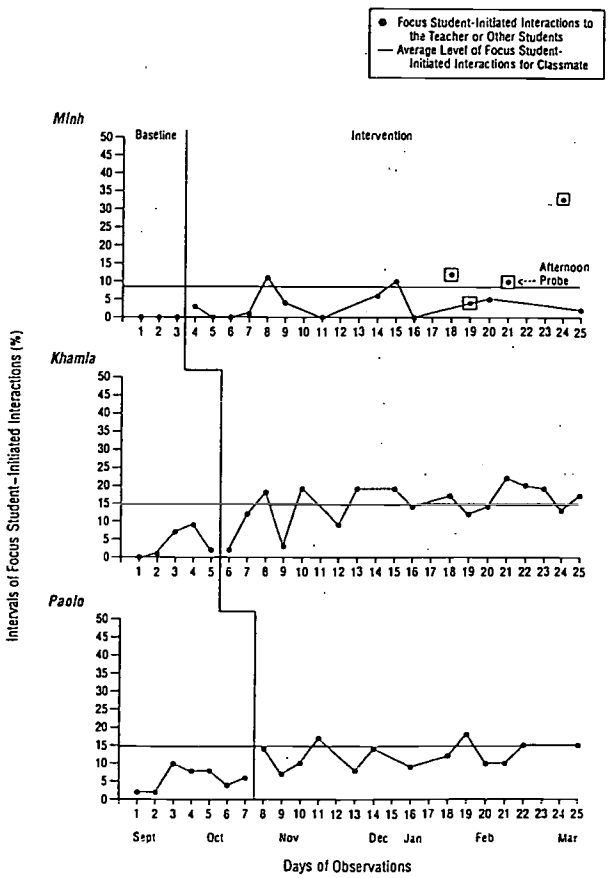

Figure 4. Percentage of intervals of focus student–initiated interactions to the teacher or other students.

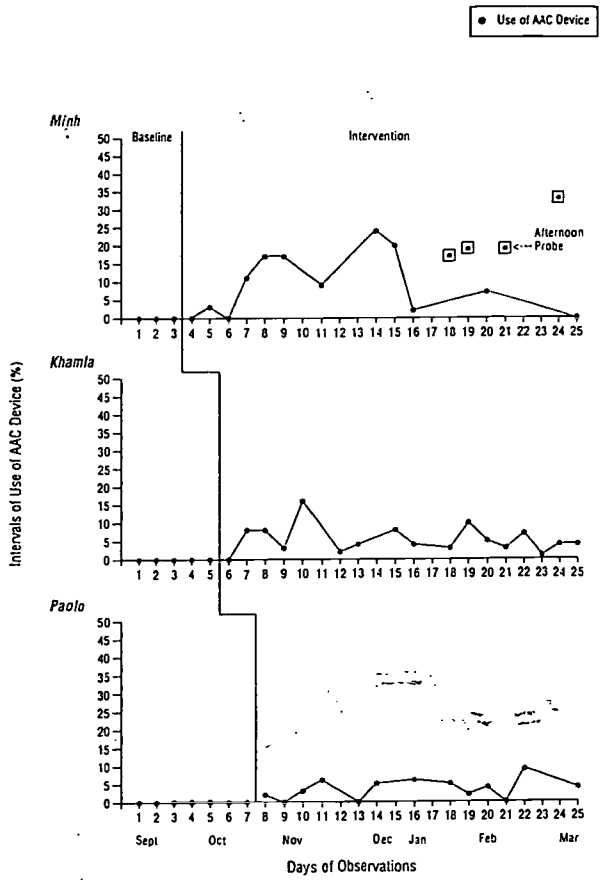

Figure 5. Percentage of intervals of use of an AAC device.

moderately well, and 3 were somewhat implemented; (b) 11 of the 15 supports for Khamla were fully implemented, 2 were implemented moderately well, and 2 were implemented somewhat; and (c) 7 of the 11 supports for Paolo were fully implemented and 4 were implemented moderately well. Ratings of the implementation of items in each UPS at the final meeting were as follows (in some cases, the number of items on each UPS changed from the first meeting to the last because of the addition and revision process): (a) all of Minh's 12 supports were fully implemented, (b) 19 supports for Khamla were fully implemented and 1 was implemented moderately well, and (c) all of Paolo's 12 supports were fully implemented.

Ecological Validity: Participant Perspectives on the UPS Process

Analysis of data from group interviews conducted at the end of the study generated themes that were grouped into two categories: benefits of the UPS process and recommendations for changes in the UPS process.

Benefits of the UPS Process

Seven themes emerged during the data analysis process that were common to at least two of the three team interviews. First, the monthly UPS meetings provided regularly scheduled opportunities to participate in updates on the students' academic and social growth and to focus with other team members on the students' support needs. For example, two team members commented,

> We're just dedicating an hour or so once a month, which is really nothing when you think about it, to really applying our knowledge and our minds and our hearts to Khamla's needs. It's changed for me so much of how I am in the classroom with him. . . It's been just wonderful.

> I think that getting the chance for all of us to discover all of his wonderful strengths and discuss all the areas where we can improve his communication, help him with interactions with more of his classmates, and see what's going on at home [is great]. . . I would never know this information unless we had these meetings.

The UPS meetings and collaborative implementation of the support plans provided opportunities for team members to share perspectives and expertise and model intervention strategies for one another. It also allowed parents to contribute their knowledge and perspectives. One team member commented,

> To have Mom here has been really nice . . . because I am able to pass teachers and other folks in the hallway, but I don't often pass Mom in the hall; so it's been nice to have her to collaborate with, too.

Team members also stated that the collaborative teaming process increased team member accountability. Each month the UPS was reviewed, and team members responsible for implementing each item were "put on the spot" to either confirm that the support was being implemented or lead a discussion of revisions that were needed.

The second theme that emerged during the data analysis process was that the UPS process (i.e., team meetings and collaborative implementation of the support plans) provided a support network for team members and reduced their feelings of isolation. Two teachers made the following comments:

> I think you don't feel as isolated. . . You feel more like, okay, my focus is communication, and somebody else's focus is something else; and it feels much more like, wow, we're all working toward the same kinds of things here. We accomplish a lot more that way.

> The main thing is I feel less alone. I don't feel overwhelmed. . . I really believe in the whole idea that more

TABLE 3: Team Interviews: Social/Classroom Behaviors

Student	Preintervention	Postintervention, 1 Month following UPS	Postintervention, at Study End
Classroom participation			
Minh	Participates minimally in whole-class activities because of the location of his desk and technology system Does not use his AAC device to participate in class Participates minimally in classroom discussions and only with facilitation from the instructional assistant	Participates more often in whole-class activities because of changes in the location of his desk Uses a low-technology board and a laptop computer to participate in classroom activities Initiates participation in class discussions using a bell system	Attends more to class activities and discussion Is more eager to participate in class More often initiates participation in class discussions Increasing use of low-technology devices for participation in classroom activities Is more confident, assertive, and opinionated
Khamla	Follows a few simple classroom routines Enjoys observing but needs assistance to join and participate in group activities Needs prompting to ask peers for materials or assistance Vocalizes minimally and speaks four words or word approximations in English	Uses peer models to follow classroom routines Takes turns with peers throughout classroom activities Spontaneously accesses low-technology boards to communicate personal needs Uses low-technology boards and simple voice output devices to participate in classroom activities	Pays attention and fully participates in group activities Demonstrates increased independence, persistence, and enthusiasm Is very motivated to initiate communication using a board vocabulary of graphic symbols and voice output devices Uses boards to repair communication breakdowns Uses a speech vocabulary of about 25 words and word approximations to create 1- to 2-word sentences
Paolo	Only communicates with gestures and vocalizations Is frustrated in his attempts to express a variety of messages Attends for only short periods of time during class activities Participates only in preferred activities Relies on instructional assistant for assistance	Attends to and takes an active role in academic activities Relies less on his instructional assistant Uses his communication book to participate in academic activities Articulates more clearly	Uses a variety of low- and high-technology AAC devices to communicate Participates in activities with peer support Relies minimally on instructional assistant support Asserts himself, makes choices, and is more confident and independent Works collaboratively with peers to complete tasks

continued

minds are better than one and that collaboration is the way we should go.

The third theme to emerge was that the UPS process expanded team members' visions of the many possibilities for inclusion of focus students in general education curriculum and classroom activities. They also spoke of the ways in which the UPS process facilitated the integration of communication strategies across classroom activities. As one team member commented, "It has definitely helped us to integrate his communication strategies across activities, as opposed to speech and language being a separate activity." Finally, team members felt that the UPS process supported expansion of the role of speech-language pathologists to include facilitation of social interactions in the classroom and to explore, along with other team members, different communication options. As one speech-language pathologist commented, "I think the low-tech [AAC devices] were

TABLE 3: *Continued*

Student	Preintervention	Postintervention, 1 Month following UPS	Postintervention, at Study End
Interactions with peers			
Minh	Does not initiate interactions with peers during classroom activities	More often interacts with other students during classroom activities	Is more confident and assertive in initiating interactions with peers
	Is well liked by his classmates and has one close friend in class	Has a core group of friends	Initiates requests for peer assistance
			Selects vocabulary for his device based on his interactions with peers
Khamla	Seldom initiates interactions with peers and relies on the instructional assistant for support and communication	Interacts more frequently with peers	Has friends
		Requests peer assistance	Engages in cooperative activities
	Rejects most offers of peer assistance	Almost always works with a partner or in a small group	Uses an increased variety of modes of communication to interact with peers
	Uses proximity and objects to initiate interactions with peers	Maintains longer interactions with peers using communication boards and books	
	Engages in parallel play during class activities		
Paolo	Uses gestures and vocalizations to interact with peers	Interacts with peers with increased independence	Participates in extended interactions with peers using a combination of speech and low- and high-technology devices
	Requires assistance to maintain interactions with peers	Selects his "partner for the day"	
	Initiates interactions primarily with the instructional assistant	Uses a communication book to interact with peers	Selects communication means based on the requirement of the context and partners
			Has developed positive relationships and friendships with other children

really quite successful, and it was really a shift because of these meetings that I would do that, because I was brought in more for high-tech [AAC devices] originally."

A fourth theme that emerged was that monthly UPS meetings allowed for the development of a comprehensive, cohesive plan of academic and social supports. One team member offered the following:

> One of the benefits has been that he has a more well-rounded plan. . . There are seeds of ideas that keep growing as opposed to fragmented ideas, which is what typically happens when we're rushing by each other in the hallway and throwing out ideas here and there. . . I feel like his plan has just gotten more and more rounded and full.

Team members also found that the UPS process was flexible (the fifth emerging theme) and allowed them to refine, add, or delete support items as needed. A teacher commented, "I really like the fact that we set goals at the beginning, but with the idea that, hey, we can change these at any point." Thus, the UPS was seen as a "living" document that was revised regularly to reflect the ongoing needs of the student, the effectiveness of the support items, and the practicality of support item implementation.

The sixth and seventh themes that emerged were that the UPS collaborative process provided a basis for the development of academic and social objectives for focus students' individual education plans (IEPs) (e.g., "I think it's really going to help us when it comes time for his IEP to develop goals around what we've seen") and that the support plan laid the groundwork for continuity across the school years. Finally, one team member commented that the UPS process provided a structure that could be molded by individual teams to make it match a team's collaboration style and individual team members' levels of comfort in the collaborative process. Another team member commented that

> Just the fact that we continued to work with the framework that you . . . presented us with; we kind of found our own way to make it all work, and I think that, to some degree,

TABLE 4: Team Interviews: Academic Skills

Student	Preintervention	Postintervention, 1 Month following UPS	Postintervention, at Study End
Reading			
Minh	Reads at a beginning grade 1 level Reads monosyllabic and highly familiar words Reads sentences composed of graphic symbols Loses interest in reading after a brief period of time	Reads simple 5- to 6-word sentences (grade 1 material) Uses a nonverbal strategy to request assistance to read unfamiliar words	Reads at an end of grade 1 level Demonstrates an ability to read words rather than graphic symbols Is motivated to read for longer periods of time
Khamla	Likes to look at books Selects books with prompts Needs assistance to move through the pages Attends inconsistently during group reading	Holds books correctly, turns the pages, and points to pictures Is more engaged during group reading of familiar books	Initiates selecting books and looking at them with others Reads graphic symbols in sentence format Recognizes the first three letters of his name
Paolo	Matches sounds to three letters Reads some simple, familiar words Vocalizes during choral reading Attends to and turns the page during group reading	Matches sounds to nine letters Is increasing his site word vocabulary Sorts uppercase and lowercase letters	Recognizes 13 letters Generates words that begin with some letters Anticipates the story sequence for familiar books
Writing			
Minh	Does not demonstrate phonemic awareness Uses invented spelling to write words Completes sentences by supplying the final word selected from an array of choices Has difficulty generating ideas for creative writing	Is beginning to spell simple words using a low-technology alphabet board Independently responds to questions by spelling out the initial letters in words using a low-technology board	Uses phonemic knowledge to spell new words Generates 2-word sentences using correct spelling and grammar Writes up to 8-word sentences dictated by an adult Attempts to write simple words with his head mouse
Khamla	Likes to scribble using a variety of writing utensils Resists needed assistance to trace letters	Uses rubber stamps with peer assistance to select topic for a journal entry Requests and uses name stamp to sign his work Traces his name with physical support	Enjoys tracing with peer assistance Initiates writing with a variety of utensils Selects appropriate graphic symbols for completing familiar sentences during journal writing
Paolo	Partially writes his name using an adapted keyboard Copies words using an adapted keyboard Attempts to trace using an adapted pencil	Types his first name and mom Makes effort to correct his typing mistakes Writes three letters of the alphabet with an adapted pencil	Types simple sentences with letter-by-letter dictation Types his full name and a few simple words

.continued

TABLE 4: *Continued*

Student	*Preintervention*	*Postintervention, 1 Month following UPS*	*Postintervention, at Study End*
Math			
Minh	Recognizes double-digit numbers Adds and subtracts numbers to 10 Adds, multiplies, and divides with a calculator Does not understand the concepts underlying multiplication and division	Completes an addition worksheet using a number line Developing initial concepts of time and money using computer software Continues to use his calculator for simple computation	Continues to develop concepts of time and money using computer software
Khamla	Is unable to count Does not use manipulatives purposively	Verbally imitates numbers 1–5 Links cube manipulatives by matching the corresponding sides	Matches numbers 1–5 Counts from 1–5 Writes numbers with assistance from peers
Paolo	Matches and sorts math manipulatives by shape, color, and size Rote counts to 7	Is developing one-to-one correspondence Matches written numbers to 3	Recognizes simple shapes Creates a repeating pattern Sequences numbers 1 to 5

we'll continue to meet . . . because we've been forced to work through it in spite of initial resistance.

Recommendations for Change in the UPS Process

Members of two of the three teams recommended that team members be encouraged to reject suggestions for the UPS that they viewed as impractical or difficult for them to implement. One general education teacher said, "I want to feel free to say 'I can't do this,' and we want to make sure that the process allows us to do that." In addition, one team member suggested that the UPS process be expanded to include students in the general education classroom who were "at risk" academically or behaviorally. Team members commented that a collaborative structure that includes general and special educators, parents, and an individualized plan of support is likely to be relevant and effective for students with learning challenges who are not identified for special education services. Team members agreed that monthly meetings could readily be expanded to include such students.

DISCUSSION

The results of this study provide information about the effects of a collaborative teaming process on the level of engagement and social and academic participation of students with AAC needs in general education classrooms. Collaborative teaming supported by the UPS process resulted in increased levels of student-initiated interactions, decreased levels of assistance provided by instructional assistants, and increased engagement in classroom activities, all to levels that were commensurate with the behavior of focus students' peers. In addition, all three teams reported substantial gains in the focus students' academic performance (reading, writing, and math).

It is important to note that low levels of student-initiated interactions in Minh's case may have been attributable to the fact that his teacher used strategies in the morning that required Minh and his classmates to work by themselves. Minh's level of social interaction was higher during the afternoon observational period, when his teacher used cooperative learning strategies for natural and social sciences. These outcomes suggest that the classroom structure and teaching strategies used by general education teachers have an important impact on the number of opportunities available for social and academic participation in general education classrooms.

All team members expressed satisfaction with the collaborative process because it allowed them to support one another and to contribute to the development of educational and social supports for the focus students. Indeed, the UPS process empowered team members to contribute their knowledge and ideas to the development of a support plan while at the same time providing an ongoing opportunity to revise the plans as necessary. A particular strength of the UPS

was its integration of supports around classroom activities. The general education curriculum became the context for intervention, and academic and social participation became the ultimate goals.

When parents, general educators, and special education personnel are working together as a team, they share responsibility for student success. Too frequently, however, student performance is viewed as the responsibility of the professional most identified with the specialty area in question (Ehren, 2000). For instance, AAC is often considered to be the responsibility of the speech-language pathologist, whereas academic performance and curricular modifications are usually seen as the responsibility of the classroom teacher and/or inclusion support teacher, respectively. The UPS process allowed the speech-language pathologists, classroom teachers, parents, and inclusion support personnel to integrate efforts and share responsibility for student outcomes. All team members assisted the classroom teachers by suggesting curricular, assessment, and instructional modifications to facilitate focus student social and academic participation. Likewise, the classroom teachers functioned as educational partners by reinforcing therapeutic targets, providing new objectives, and assessing students' performance on an ongoing basis. A characteristic that seems to typify a collaborative team is that all members are valued by one another and are able to join together to create a whole that is stronger and more effective than any single team member alone (Giangreco, 2000).

Despite the general benefits of collaborative teaming on student outcomes, some considerations need to be addressed. The first is that providing effective team support to students with AAC needs in inclusive classrooms involves many competencies (Soto Müller, Hunt, & Goetz, 2001b), some of which are targeted in personnel preparation programs and others that are currently developed on the job, for the most part (Giangreco, 2000). As inclusion becomes an educational option for increasing the number of students with AAC needs, educational personnel from all disciplines require explicit instruction and exposure to collaborative teaming practices at the preservice level. Second, collaborative teaming requires adequate planning time and financial resources. Although the results of the current study indicate that the UPS process provided a practical structure to support collaborative practices, it was funded by a university research project. Building an inclusive school community depends on having sufficient resources to allow educational team members to engage in collaborative planning on a regular basis. West and Idol (1990) outlined a number of strategies for increasing collaborative planning time, including (a) having the school's principal or other support staff teach one period per day to allow teachers to attend planning meetings, (b) hiring a "floating" substitute teacher (perhaps funded by the business community) to fill in during planning days, and (c) altering the length of the school day once each week to provide staff collaboration time without students.

A third limitation of the study was its small sample size. This investigation restricted its focus to three educational teams and three students, and although it provides insight into the collaborative process, the ability to generalize beyond the small sample is limited.

In closing, the implementation of inclusive education of students with AAC needs requires a collaborative effort by members of educational teams who share a vision of full social and academic participation of students with disabilities within their school communities. However, successful collaborative teaming depends on regularly scheduled opportunities for members of educational teams—including parents—to share their expertise, identify common goals, build plans of support, and determine responsibilities for implementation. Identifying and implementing structures for regularly scheduled planning time requires both administrative support and staff who are motivated to work as members of collaborative teams (West & Idol, 1990). Further research is needed to document for policy makers the links between effective implementation of models of collaborative teaming and positive outcomes for students. There is also a need to increase the number of university-based personnel preparation programs that have moved beyond an "expert model" to a collaborative, shared decision-making model whereby all members of an educational team have the knowledge, experience, and responsibility for designing and implementing educational and social supports for students with disabilities who are members of general education classrooms.

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Ryalls & Baum

Ryalls, J., & Baum, S. (1990). Review of three software systems for speech analysis: CSpeech, BLISS, and CSRE. ***Journal of Speech-Language Pathology and Audiology, 14***, 49.

Three software packages for digital signal analysis of speech were evaluated and compared. Factors such as user-friendliness and ease of execution relevant to operations likely to be of interest to Speech-language pathology were considered and discussed. Each of these three relatively low-cost University-developed systems runs on the IBM-compatible AT type machine, using the Data Translation DT-2801-A analog/digital conversion card. All three provide 12-bit resolution at the 10 or 20 kHz sampling rates, standard to most speech research.

John Ryalls, University of Montreal.

LSHSS

Clinical Exchange

Professional Skills for Serving Students Who Use AAC in General Education Classrooms: A Team Perspective

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ABSTRACT: The roles of school-based professionals serving students with augmentative and alternative communication (AAC) needs are changing in light of the inclusion movement. Focus group research methodology was used to investigate professional skills regarded by educational team members as necessary to support students who used AAC in general education classrooms. Educational teams consisted of speech-language pathologists, classroom teachers, inclusion support teachers, instructional assistants, and parents. All valued the ability to work collaboratively, provide access to the core curriculum, cultivate social supports, maintain and operate the AAC system, and create classroom structures to educate heterogeneous groups of students. Implications are discussed for AAC service delivery and the professional preparation of speech-language pathologists serving as members of AAC teams in inclusive classrooms.

KEY WORDS: augmentative communication, AAC, collaborative teaming, focus groups, inclusion, speech-language pathologists

In recent years, the number of students with severe communication impairments and augmentative and alternative communication (AAC) needs served in general education settings has increased (Erickson & Koppenhaver, 1998; Erickson, Koppenhaver, Yoder, & Nance, 1997; Koppenhaver, Spadorcia, & Erickson, 1998; Simpson, Beukelman, & Bird, 1995; Sturm, 1998). Successful inclusion of students with significant disabilities requires more than simple placement in a general education classroom. A considerable body of literature shows that effective inclusion programs require substantive changes in the structure of the classroom, a different conceptualization of professional roles, and a continuous need for collaborative teaming (e.g., Gee, Graham, Sailor, & Goetz, 1995; Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993; Giangreco, Prelock, Reid, Dennis, & Edelman, 1999; Rainforth & York-Barr, 1997; Thousand & Villa, 1992; York-Barr, Schultz, Doyle, Kronberg, & Crossett, 1996).

Students with disabilities are included when they are full-time members of age-appropriate, general education classrooms in their home schools and receive necessary supports for participating both socially and academically (e.g., Gee et al., 1995). In the case of students who use AAC systems, team members must work together to integrate an often complex array of technologies for learning, mobility, and participation in the classroom (Erickson & Koppenhaver, 1998; Erickson et al., 1997; Koppenhaver et al., 1998; Soto, Müller, Hunt, & Goetz, in press; Sturm, 1998).

As inclusive education continues to emerge as a widespread practice for students with AAC needs, it is critical that research be conducted to identify those factors that contribute to successful outcomes. The information reported on here is part of a larger study examining the opinions of educational team members regarding critical issues in the inclusion of students with AAC needs (Soto et al., in press) The specific intent is to describe the professional skills that educational team members identify as necessary for supporting students who use AAC in inclusive classrooms. It is important that educational personnel understand their expected roles and responsibilities within inclusive classrooms so that they can meet the needs of the students they serve. Additionally, understanding the ways in which these roles and responsibilities of educational personnel are changing provides an opportunity to reflect on the ways in which professional and in-service preparation programs should be altered to address the demands of an inclusive model of service delivery.

THE FOCUS GROUP APPROACH

Focus Groups

To identify the professional skills considered essential for the support of students who use AAC in inclusive classrooms, focus group methodology was selected (Krueger, 1993; Morgan, 1998). This methodology uses semi-structured group discussions led by a trained facilitator. The focus group approach allows in-depth knowledge to be obtained concerning the professional skills that team members value in supporting the successful inclusion of students with AAC needs. As recommended by qualitative researchers (e.g., Krueger, 1998b; Morgan, 1988, 1993), the focus group participants were selected based on their expertise in the inclusive education of students with AAC needs. AAC specialists employed by school districts in the San Francisco Bay Area were personally contacted. The specialists identified AAC-using students who were full-time members of general education classrooms. A total of 30 core members of those students' educational teams were invited to participate in a focus group discussion. All teams had more than 3 years of experience working in inclusive classrooms. The 30 participants represented six school districts.

Five focus groups were organized according to the participants' roles within educational teams. These roles were speech-language pathologist, parent, classroom teacher, inclusion support teacher (i.e., a special education teacher assigned to provide support to the classroom teacher), and instructional assistant. The role of the inclusion team members varied depending on whether they were parents, teachers, or related service professionals. (For a general description of the roles of educational team members in inclusive programs, see Giangreco et al., 1999.) As shown in Table 1, the groups ranged in size from four to seven participants. Table 1 also summarizes demographic information about the focus group participants.

Organization of Focus Group Meetings

Five focus groups were organized according to their roles on educational teams, such as speech-language pathologist, parent, classroom teacher, inclusion support teacher, or instructional assistant. The participants were not members of the same inclusion team. One semi-structured interview lasting from 60 to 90 minutes was conducted with each

Table 1. Demographic information on the 30 focus group participants.

Group	*N*	*Age*	*Gender*	*Ethnicity*	*Years of experience with AAC*[a]
Speech-language pathologists	7	25–35 (n = 1) 35–45 (n = 2) 45–55 (n = 4)	All Female	All European American	3–5 (n = 2) 6–10 (n = 3) 11 or more (n = 2)
Parents	4	35–45 (n = 2) 45–55 (n = 2)	3 Female 1 Male	All European American	3–5 (n = 1) 6–10 (n = 3)
Classroom teachers	6	35–45 (n = 1) 45–55 (n = 5)	5 Female 1 Male	3 European American 2 Hispanic American 1 Armenian American	3–5 (n = 5) 6–10 (n = 1)
Inclusion support teachers	7	20–35 (n = 3) 35–45 (n = 3) 45–55 (n = 1)	All Female	5 European American 2 Asian American	3–5 (n = 3) 6–10 (n = 3) 11 or more (n = 1)
Instructional assistants	6	25–35 (n = 3) 35–45 (n = 2) 55–65 (n = 1)	All Female	3 Caucasian 2 Hispanic American 1 African American	3–5 (n = 3) 6–10 (n = 3)

[a] AAC = augmentative and alternative communication.

group, which consisted of four to seven participants. The first author served as moderator in all five interviews. The role of the moderator was to stimulate discussion through the use of a nondirective interview guide and facilitation strategies (e.g., probes), which functioned to clarify responses, obtain additional information, and encourage the active participation of all individuals (Krueger, 1998b).

All focus group meetings began with a brief introduction by the moderator explaining the purpose of the interview and outlining the ground rules (e.g., freedom to express one's opinions) (Krueger, 1998a). The introduction was followed by six questions, including an icebreaker and a wrap-up question. The last question invited participants to identify what each believed to be the most critical point of the evening's discussion. The following four content questions were designed to elicit opinions from the focus group members on factors and skills that contributed to the successful social and academic inclusion of students with AAC needs.

1. In your experience, what does successful inclusion of students who use AAC look like?
2. What are the barriers that may limit access to such a successful experience?
3. What are the most important skills that inclusion team members need in order to make the inclusion of AAC-using students possible?
4. What are the positive outcomes you have seen as a result of the inclusion of students who use AAC?

The second author served as assistant moderator during all five interviews. The assistant moderator developed a summary throughout each focus group of key points made by participants, as well as notable quotes. She shared the summary with the group during a 3–4 minute period at the end of each focus group and concluded the session by asking whether the summary was accurate, and whether any major points had been omitted. All focus group discussions were audiotaped and transcribed verbatim for later analysis.

The meetings took place at the homes of two of the research team members and the library of a public school. As is customary in focus group research, participants were given a small honorarium for their participation (Krueger, 1998b). A third member of the research team was in charge of setting up the recording equipment and the refreshments. Both the assistant moderator and a third researcher sat outside of the focus group circle to avoid influencing the group members.

After participants left, the moderator conducted a debriefing with the assistant moderator and the other research team member. The purpose of the debriefing was threefold: (a) to review from multiple perspectives the major points that were made, (b) to identify differences between groups, and (c) to note unexpected responses.

Identifying and Verifying Themes

The focus group transcripts were then analyzed to identify the participants' opinions regarding the skills required to support the inclusive education of students with AAC needs. A content analysis was conducted in two phases using a method outlined by Strauss and Corbin (1990). During the first phase, the five members of the research team worked independently to identify each statement from the focus group transcripts that indicated an opinion regarding the professional skills needed to support the inclusive education of AAC-using students. An opinion was operationally defined as a statement expressing an evaluation or judgement based on firsthand experience. Each opinion statement was labeled according to the skill to which it referred (e.g., the ability to operate the student's AAC system), as judged by the team member. Team members then compiled lists of necessary professional skills based on their independent analyses, noting only the skills that were mentioned across all focus groups.

During the second phase of analysis, the entire team met to compare results. A master list of professional skills was produced by identifying skills that appeared across each of the independently generated lists (Strauss & Corbin, 1990). Any differences between the individually generated lists of necessary skills were resolved via team consensus. The team then worked together to identify clusters of skills that seemed to group together under a common theme (e.g., AAC system maintenance and operation) (Strauss & Corbin, 1990). The themes emerged by consensus as the research team grouped all identified skills (Morgan, 1998).

As recommended by focus group researchers (Morgan, 1998; Morgan & Krueger, 1993), a number of procedures were used to ensure that findings accurately represented the participants' opinions. First, focus groups included members of different educational teams who had different professional roles, thereby maximizing the possibility that discussions captured multiple perspectives. Second, at the end of each focus group, the assistant moderator summarized the major points of the discussion, giving the participants an opportunity to suggest revisions and the research team an opportunity to verify that they were accurately "hearing" what participants were saying. Third, the consensus approach to the content analysis reduced the potential for bias from any single perspective. Finally, after all analyses were complete, a member check was held enabling members of the original focus groups to review the initial findings, confirm their overall accuracy, and suggest revisions.

PROFESSIONAL SKILLS: FIVE THEMES

The four content questions yielded a number of professional skills that participants in all five focus groups believed were necessary to support students with AAC needs in inclusion programs. The skills were grouped by research team consensus under one of five major thematic headings: (a) collaborative teaming, (b) providing access to the curriculum, (c) cultivating social supports, (d) AAC system maintenance and operation, and (e) creating classroom structures that support the learning of heterogeneous groups of students.

Collaborative Teaming

All focus groups stressed the ability to work collaboratively in a multidisciplinary team as a critical skill for providing services to students with AAC needs in general education classrooms. When describing what collaborative teaming meant to them, participants emphasized the importance of regular team meetings where all team members contributed to the development of strategies and ideas for achieving mutually defined goals. Collaborative teaming skills were further defined as an understanding of the roles and responsibilities of all team members combined with a willingness to be flexible around role boundaries. Participants also mentioned the importance of team members treating one another with respect regardless of professional title or position. Finally, successful collaborators were described as individuals who were able to communicate effectively and maintain an action-oriented approach. Typical comments by focus group participants included the following:

- I think successful inclusion takes a good team where everyone talks a lot about what needs to be done, and there are a lot of people who are filling in the gaps and supporting. (Speech-language pathologist)
- [Team members] need to have organizational skills, and they also need to have communication skills and team building skills—the ability to work with their colleagues without letting their egos or old histories get in the way. (Parent)
- The team members have common goals and objectives that they're working toward, instead of dividing the child up into different areas of expertise. (Speech-language pathologist)

Providing Access to the Curriculum

All focus groups noted the importance of using the student's AAC system as a means for accessing the core curriculum in general education classrooms. Participants believed that it was imperative for all team members, irrespective of title, to have a working knowledge of the core curriculum and the ability to contribute to curriculum adaptations and modifications. Participants also believed that it was necessary for team members to be able to assess the student's individual learning style in order to develop appropriate instructional strategies. Typical comments by focus group participants included the following:

- Knowing what the curriculum is is very important, so that when the teacher is doing some kind of class instruction, your student can answer the questions about the very specific thing that [the class] is studying. (Speech-language pathologist)
- You need...the ability to recognize the child's individual and unique learning style. (Instructional assistant)

Cultivating Social Supports

All focus groups expressed the need for team members to be able to provide ongoing support to the AAC-using student in a number of ways. These strategies included facilitating social interactions between the student and his or her peers, identifying and cultivating natural supports within the classroom, and training peers as communication partners. Participants also noted the importance of being able to highlight the uniqueness and attractiveness of the focus student (e.g., programming the student's device to reflect his or her interests and personality). However, all focus groups stressed that it was critical to provide support in an unobtrusive way so as to foster the independence and autonomy of the focus students. Typical comments about cultivating social supports included the following:

- You need to be able to know how to develop the peer support in the class, so that the peers are supporting the student as much as possible. (Inclusion support teacher)
- Another skill which I think is really, really difficult to teach people is...how to support interactions between kids without yourself being a major player in the interaction, how to prompt another kid to interact with the kid you're targeting, as opposed to you being in the middle of it. (Speech-language pathologist)

AAC System Maintenance and Operation

When describing the skills that related to AAC technology, focus group participants stressed the importance of team members' knowing how to operate, maintain, and integrate all of the elements of the AAC system (e.g., low-tech boards, hi-tech devices, and computers). Although participants did not feel that it was necessary for team members to "have all of the answers," they mentioned the importance of team members knowing how to get technical help or access additional resources when necessary.

Participants also stressed the importance of being able to facilitate the student's use of the AAC system across classroom activities, make vocabulary recommendations for participation in current and upcoming school events, and identify vocabulary for the student to express his or her personal "voice" (e.g., preferences, interests, or a sense of humor). Finally, participants expressed the need for team members to familiarize peers with how the AAC system worked, as well as to train them to provide communication support. Typical comments included the following:

- If [staff] can have more exposure to the AAC system, and have some key maintenance points—both system maintenance and vocabulary maintenance—then they feel like they can handle what comes. (Inclusion support teacher)
- One thing I think that's important—a skill to have for different members of the team—is to be able to see opportunities to use the system and to be aware of how the system can be used within the curriculum, how it can be used within a social context, and how it could be used at home. (Inclusion support teacher)

Building a Supportive Classroom Community

The ability to "build a community" that would fully support students with AAC needs in general education

classrooms emerged as a fifth theme across all focus groups. When further describing the skills that were involved in building community, participants mentioned the ability to use cooperative learning strategies, team teaching between general and special education personnel, and sharing information with colleagues. Additionally, participants emphasized advocacy skills that directly related to building an inclusive educational community wherein the AAC-using student was embraced as a rightful member. These skills included identifying ways in which general education and special education personnel might work together to support all students in the classroom, generating activities that promoted the appreciation of differences within the classroom, and advocating for inclusive education in general, as well as for the needs of the particular focus student. Comments included the following:

- Well it doesn't work as well in little rows.... It works in cooperative grouping and pairing. (General education teacher)
- Well, physically the student isn't down in the left corner of the classroom. (Speech-language pathologist)
- I think that inclusion is forcing us to...become more student-centered, rather than other-centered, which would be really wonderful. (Speech-language pathologist)

IMPLICATIONS FOR SERVICE DELIVERY AND PERSONNEL PREPARATION

The results of the focus group discussions provide preliminary information regarding skills valued by educational team members who serve students with AAC needs in general education classrooms. Although the focus groups were not specifically asked to place special emphasis on any particular team member, the results of this study seem to have important implications for the appropriate roles and responsibilities of speech-language pathologists serving students with AAC needs in inclusive classrooms. The identified professional skills can be used to inform speech-language pathologists on how to address the service delivery demands of an inclusive environment.

As Whitmire (2000) recently noted, an understanding of the changing roles and responsibilities of school-based speech-language pathologists is critical for the provision of context-relevant services that will not jeopardize the unique contributions made by the speech-language pathologist to student learning and development. Findings underscore the importance of speech-language pathologists, who serve in inclusion teams, in being sensitive not only to the communication needs of the individual AAC user, but also to the specific classroom context within which the student will be using his or her communication system. In addition to providing clinical services if needed, the speech-language pathologist also should be able to maximize the AAC user's social and academic participation in the classroom by making curricular modifications and facilitating social interaction with peers. The general education curriculum and regular school activities now become the context within which intervention targets are defined (Whitmire, 2000).

Members of all five focus groups expressed a need for flexibility around traditional role boundaries for all team members. In particular, this would point to the importance of the speech-language pathologist knowing how to train other people to assume many of the responsibilities that were formerly considered to be his or her exclusive domain (Lyon & Lyon, 1980). This means that the speech-language pathologist helps the general education teacher, inclusion support teacher, and instructional assistant to develop strategies for including the AAC-using student both academically and socially. In turn, teachers and other educational personnel help the speech-language pathologist with implementation and generalization of communication goals (Whitmire, 2000).

Finally, these results encourage speech-language pathologists to see themselves as members of collaborative teams rather than as outside consultants in leadership roles. The ability to provide collaborative services means knowing how to share information within the context of a team meeting or the general education classroom. Sharing responsibility for student success involves working in partnership with other educational personnel. Members of all five focus groups consistently echoed the theme of the need for an "equal footing" relationship, rather than hierarchical relationships, among team members. Instructional assistants and parents were particularly emphatic in stressing the importance of professional team members being willing to value the contributions of all team members—regardless of professional role or credentials (Giangreco, 1990; Giangreco et al., 1999; Rainforth & York-Barr, 1997).

The results of the focus group process seem to have implications for the preparation of speech-language pathologists serving on AAC teams. Our findings suggest that, at the professional level of preparation, programs should include extensive information on the different roles and responsibilities speech-language pathologists are likely to assume as members of AAC teams, and how these roles and responsibilities may change depending on the client and the contexts within which services are delivered. Furthermore, professional preparation programs should provide the prospective speech-language pathologist with ample opportunities to practice AAC in diverse educational and clinical settings and to observe and develop collaborative teaming skills.

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