Collaboration Strategies Reported by Teachers Providing Assistive Technology Services

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Collaboration between special educators and general education teachers is associated with academic and social success of students with disabilities who are included in the general education classroom. This study reports the findings from 96 interviews conducted with special and general education teachers regarding collaboration strategies to provide assistive technology services to students. Strategies such as collaborative consultation, problem solving, and teaming are discussed, and interview findings are provided. The results are presented as four themes that emerged during interview analysis: (a) current teacher collaboration practices, (b) teacher-reported barriers to collaboration, (c) teacher suggestions to improve collaboration, and (d) reasons why teachers do not practice collaboration.

Collaboration between general education and special education teachers is associated with successful inclusion of students with disabilities into the general education classroom (Brownell, Yeager, Rennells, & Riley, 1997; Hobbs & Westling, 1998; Rainforth & York-Barr, 1997; Soto, Muller, Hunt, & Goetz, 2001; Thousand & Villa, 2000; Villa, Thousand, Nevin, & Liston, 2005) and with overall improvement in student academic and social outcomes (Thousand & Villa, 2000). This practice is also mandated by the Individuals with Disabilities Education Improvement Act (IDEA, 2004) in its definition of assistive technology (AT) services. According to IDEA, AT services are defined as “any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device” (20 U.S.C. §300.6). Services include “coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs” (20 U.S.C. §300.6(d)). In order to comply with the law, teams of individuals must work together to (a) provide educational services to students with disabilities, (b) enable students to access and progress in the general education curriculum, and (c) interact with nondisabled students.

When educators strive for successful inclusion of students with disabilities into general education placements, general education teachers, special education teachers, and related services personnel must work together to share materials, knowledge, and instructional strategies. To that end, they must use a variety of strategies to collaborate and join forces to best serve the growing number of students with disabilities who are served with their peers in general education classrooms (Villa & Thousand, 2005).

This sharing of expertise becomes essential when students using AT are educated in general education classrooms, since general education teachers often do not have the knowledge regarding AT that the special educator or related service personnel may possess (Bausch
& Hasselbring, 2004). In addition, inclusion challenges are multiplied because of the wide variety of devices an individual student may use and the modifications and adaptations that must occur for students to be meaningful and active participants in the regular education classroom (Soto, Muller, Hunt, & Goetz, 2001; Sturm, 1998).

Collaboration processes such as collaborative teaming, collaborative consultation, and collaborative problem solving can be effective means to share expertise and reach the common goal of student success (Hunt, Soto, Maier, Muller, & Goetz, 2002; Villa & Thousand, 2005). When collaboration is done effectively, there are numerous benefits for both students and teachers. Students with disabilities have improved academic and social outcomes when their teachers collaborate, plus their teachers become empowered (Thousand & Villa, 2000).

Defining Collaboration Models

Common Collaboration Characteristics

Hobbs and Westling (1998) noted that opportunity to collaborate is one specific factor related to successful inclusion of students with disabilities into the general education classroom. While it is widely believed that full inclusion is facilitated by collaboration between general education, special education, and related service personnel, there are a variety of definitions of collaboration and its essential components.

One commonly shared definition of collaboration has been provided by Friend and Cook (1990) who suggest, “collaboration is a style for interaction between at least two co-equal parties voluntarily engaged in shared decision making as they work toward a common goal” (p. 72). They describe six essential characteristics that must be present for collaborative efforts to be effective. Friend and Cook describe these six essential elements as (a) mutual goals, (b) parity, (c) shared participation, (d) shared resources, (e) shared accountability, and (f) voluntariness (members should voluntarily participate in collaborative efforts). (Readers are referred to the original source for a detailed description of each.)

Other researchers support the characteristics outlined above, placing a heavy focus on sharing a common vision for student goals; taking responsibility for all students, goals, and outcomes; and giving equal status to all team members (Brownell, et al., 1997; Rainforth & York-Barr, 1997; Snell & Janney, 2000). Characteristics that facilitate collaboration include fostering a commitment to the collaboration process and encouraging frequent communication and interactions between teachers, as well as between teachers and administrators (Brownell et al., 1997). Wallace, Anderson, and Bartholomay (2002) analyzed teacher responses from interviews and focus groups and found similar themes. Specifically, they discovered that collaboration resulting in the inclusion of students with disabilities is facilitated by a school culture in which the entire school takes responsibility for serving all students, with and without disabilities, and where teachers across departments plan together and share resources such as knowledge and materials.

Jackson, Ryndak, and Billingsley (2000) outlined nine helpful practices for successful inclusion; collaboration between the special and general education teachers is one of them. When they examined the views of inclusion experts on the topic of collaboration, four themes emerged: (a) create a school-wide vision that bridges the special education and general education divide; (b) encourage teachers to co-teach, consult, role-release, collaboratively problem-solve, and increase cooperative teaming; (c) provide pre- and inservice experiences to train teachers to collaborate effectively; and (d) increase communication and relationship-building between general and special education staff.

While collaboration strategies often share common characteristics, there are several forms of collaboration that are frequently employed. Collaborative teaming, collaborative consultation, and collaborative problem solving are specifically described in this paper.

Collaborative Teaming

Thousand and Villa (2000) define a “collaborative team” as members who come together to work on shared goals, believe that all members share valuable expertise, share tasks and responsibilities, and use a collaborative teaming process. For the team process to function smoothly, they note that collaborative teams should meet frequently, share a feeling of “interdependence,” use communication and problem solving skills, and assess and monitor the functioning and accountability of the team.
Collaborative teaming and the problem solving and decision making that occurs within these teams has been found to increase successful inclusion of students with disabilities (Hunt et al., 2002; Stainback & Stainback, 1990; Thousand & Villa, 2000). Wallace, et al. (2002) found that inclusion was facilitated when special educators took a role “in the general education classes as primarily consultative, offering valuable knowledge to general educators regarding student programming, student curriculum, and instruction” (p. 369). It is important to note that the general education and special education teachers’ authority and status were those of equals, thereby eliminating a hierarchy and encouraging a partnership of equals working toward a common goal.

In order to gain the AT expertise needed to make informed AT decisions, teams may have to expand their membership beyond the existing individualized education program (IEP) team personnel. The Quality Indicators for Assistive Technology (QIAT) Consortium (2004) suggests that:

IEP team members combine their knowledge and skills to determine if assistive technology devices and services are needed to remove barriers to student performance. When the assistive technology needs are beyond the knowledge and scope of the IEP team, additional resources and support are sought. (p. 3)

In some instances, teams may require the services of an AT specialist to provide strategies for inclusion and implementation of AT across the student’s educational program. In such instances, collaborative teaming may be used in conjunction with collaborative consultation.

**Collaborative Consultation**

The collaborative consultation model involves several participants, including the consultant (frequently the special educator) who shares specialized or expert knowledge with a mediator (frequently the general educator), who then uses this newly acquired knowledge to improve services to the student. Both the consultant and the consultee share responsibility for the student and the two (or more) educators involved address common concerns related to the student or instruction. During the collaborative consultation process, the consultant shares information with the consultee although there should be an environment of parity and equality between the teachers (Idol, Paolucci-Whitcomb, & Nevin, 1995). This process can be used between two teachers or can involve a consultant working with an entire collaborative team on a shared goal (Idol, Nevin, & Paolucci-Whitcomb, 1994).

Giangreco, Prelock, Reid, Dennis, and Edelman (2000) warn against falling into the “expert trap” (p. 365) in which special educators or related service personnel are viewed as the experts, and a hierarchy is created in which each member of the collaborative effort maintains his or her separate goals for the student based on his or her area of expertise and information sharing is interrupted. Instead, it is suggested that each team member practice role-release (i.e., teaching other collaborators discipline-specific skills to implement with students) in an effort to repeat specialized techniques with students across multiple environments, activities, and personnel (Rainforth & York-Barr, 1997).

**Collaborative Problem Solving**

Collaborative problem solving is one technique teachers can use to address concerns related to student inclusion, instruction or material adaptation, or implementing AT in the classroom. Collaborating teachers can follow the team problem solving steps to address concerns or challenges and draw on the variety of experiences and expertise each team member brings to the group. The problem solving steps include defining the problem, determining possible causes, identifying possible interventions and making predictions, and evaluating progress (Hobbs & Westling, 1998; Pugach & Johnson, 1995).

Hunt, Doering, Hirose-Hatae, Maier, and Goetz (2001) used a collaborative problem solving process that encouraged team members (including general, special, and bilingual teachers; parents; and consultants) to develop and implement instructional supports for students both with and without disabilities. Team members were successful in developing and implementing supports that increased students’ academic and social skills. The authors reported that participating team members reduced their feelings of isolation, shared responsibility for creating and implementing supports, and were exposed to the expertise of others. They attributed the collaborative success to shared and ongoing reflection.
Barriers to Collaboration

Not surprisingly, barriers to teacher collaboration are commonly the inverse of the elements needed for successful implementation. Brownell et al. (1997) outline several common barriers to successful collaboration between special education and general education teachers. One such barrier is the tendency for teachers to work in isolation and therefore not be exposed to differing instructional methods or beliefs about inclusion. As related to AT, teachers who work in isolation may not be aware of the wide array of devices available and practical applications of the devices. As technology advances and changes, ongoing training in awareness of AT as well as the use of technology to access the curriculum is critical for teachers.

Brownell et al. (1997) also cite “Balkanization,” the formation of subcultures within a school, as a barrier to collaboration. Teachers often create subcultures based on academic disciplines. These formations may prevent collaboration across special education and general education artificially created boundaries. Such boundaries may prevent the shared vision or school-wide concern for students with disabilities that is needed for true collaboration to take place. The final barrier described by Brownell et al. is that of “contrived collegiality,” which is characterized by members of a collaboration team who are forced together to meet regulations.

Research Questions

The purpose of this study was to investigate the specific strategies used in schools to support and encourage collaboration between special and general education teachers to provide AT services to students. The following questions guided the research: (a) What specific strategies do special education teachers report as being useful to collaborate with general education teachers? (b) What collaboration strategies do teachers find successful in providing AT services to students? and (c) What suggestions do teachers report to improve collaborative efforts to provide AT services to students? The themes and examples reported in this article are strategies teachers reported using for collaboration.

Method

In October, 2000, the U.S. Department of Education awarded a cooperative agreement to the National Assistive Technology Research Institute (NATRI) to study AT use nationwide. One of the components of this research was investigating how AT was integrated into the learning environment (Lahm, Bausch, Hasselbring, & Blackhurst, 2001). This qualitative study used semi-structured teacher interviews to gather information about the strategies and practices that general and special education teachers report as useful to collaborate and provide AT services for students with disabilities.

Participants

Ten states, representing all four geographic regions designated by the U.S. Census Bureau (U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, n.d.), were identified to participate in an analysis of their AT practices and procedures. States were also chosen on the basis of diversification in AT service delivery models (e.g., regional model, local model) and population size. Data collectors, who were identified by their supervisors as being people in the district who provided AT services to students or were knowledgeable about AT services, were selected for each school district or educational cooperative participating in the study. The data collectors were asked to identify a maximum of 10 students in their districts who used AT devices and were encouraged to identify students representing a wide range of ages, disabilities, and technology use (i.e., low-to high-tech devices). These students’ teachers were subsequently interviewed by the data collectors.

Ninety-six teacher interviews were analyzed. Interviewees included resource teachers, special education teachers, specialists such as itinerant teachers, and general education teachers. Ninety-seven percent of participating teachers held a bachelor’s degree (although not necessarily in education or special education), and 48% of these degree teachers held a master’s degree. Thirteen percent of participants taught prekindergarten, 42% taught in elementary schools, 20% in middle schools, and 24% in high schools—thus representing the continuum of teachers working with students ages 3-21 who receive special education services under IDEA. Nearly half (48%) of the
teachers had 1-10 years of experience teaching in general education classrooms, 9% had 11-20 years of experience, and 43% had no experience in the general education setting. Similarly, nearly half (48%) of the teachers had 1-10 years of experience teaching in special education settings. Only 14% had no experience teaching in special education classrooms, 26% had 11-20 years of experience, and 12% had more than 20 years. As may be expected, more teachers reported serving students with mild disabilities in inclusive settings (43% of teachers) than in segregated settings (17% of teachers), and more teachers reported serving students with moderate/severe disabilities in segregated settings (42%) than in inclusive settings (24%).

**Procedures**

Local data collectors attended a three-hour training conducted by NATRI staff in which the purpose and research objectives of NATRI were explained. The data collection instruments were described and data collection procedures explained. Data collectors were asked to identify 10 target students from their districts who were AT users. The data collectors were taught how to collect data using instruments designed by NATRI, including collecting field notes, completing checklists, and conducting audiotaped interviews.

For the interviews, data collectors were provided with an interview protocol and guide for the teachers of the selected students. The interview guide contained lead questions that were required to be asked, and probe questions to be used only if the interviewee did not fully answer the lead question. Data collectors were instructed to ask additional questions when necessary to completely understand the response the interviewee was giving. They also were taught general guidelines for conducting interviews, including establishing rapport, paying attention to the interviewees, stating the purpose of the interview, reassuring interviewees about confidentiality, and ensuring that the interviews were audiotaped properly.

The teacher interviews included a comprehensive list of questions on AT topics such as overall service delivery, state initiatives, personnel, teacher training, policies and procedures, IEP meetings and consideration of AT, documentation in the IEP, assessment of AT, AT implementation, general education, evaluating effectiveness of AT, family/consumer responsiveness, and district strengths and barriers. Teachers’ responses to the questions directly related to collaboration efforts are the focus of this article.

Once student and family consent had been obtained, data collectors conducted semistructured interviews with the student’s teacher. If students had more than one teacher, they interviewed the teacher who most frequently used AT with the student (including both general and special education teachers). Specific questions were asked regarding teachers’ collaboration practices. Teachers were asked the following question: “What practices and strategies have been successful in providing AT collaboration among special education and general education teachers?” Additional probe questions used at the interviewers’ discretion included, “How do you and the general educator work together in terms of your students’ AT use?” and “Explain how the team of professionals assigned to your students work together to provide AT across settings.”

**Data Analysis**

A total of 96 teacher interviews were analyzed. Their audiotaped interviews were transcribed, proofread, and imported into QSR NVivo, a qualitative analysis software program (QSR International Pty. Ltd., 2002). This software assisted the researchers by organizing and storing the data into categorical codes. Interview responses to questions directly assessing collaboration practices were assigned a broad collaboration code. Then, each passage within a collaboration code was reviewed. Themes were developed using a constant comparative method (Lincoln & Guba, 1985) in which the researchers read a unit of data and assigned it a code. Each subsequent passage was compared to previous passages and was assigned the same code if the passages contained a similar theme, or a new code if the response revealed a new theme. This process continued for all interviews with four major themes and five subthemes emerging. In addition, a quantitative analysis was carried out in which the number of passages were counted for each theme. During the analysis process, the NATRI staff met and reviewed the emerging themes. Discussion was held until the group reached consensus on the emerging major themes and sub-themes.

**Findings**

Teacher responses were grouped into four broad themes: (a) current collaboration practices, (b) teacher-report-
ed barriers to collaboration, (c) teacher suggestions to improve collaboration, and (d) teachers who do not practice collaboration. Current collaboration practice responses were further grouped into themes of (a) strategies to facilitate collaboration, (b) staff participating in collaboration, (c) frequency of collaborative meetings, (d) communication strategies, and (e) topics addressed during collaboration meetings.

**Current Collaboration Practices**

**Strategies to Facilitate Collaboration**

Throughout the teacher interviews, an underlying disconnect was noticed between special education and general education teachers due to the lack of a common knowledge base and lack of communication. This disconnect can be a potential barrier when educators are expected to work collaboratively to plan and implement instruction for students. However, teachers did state a set of strategies useful for enhancing collaboration, including (a) building relationships, (b) making AT implementation easy, (c) obtaining similar training for special and general education teachers, and (d) having willing attitudes surrounding collaboration practices.

First, several teachers reported building relationships with other teachers as key for successful collaboration. Ideas for building these relationships ranged from being aware of general education teachers’ workloads to becoming an active member of the school culture. One special educator pointed out the importance of being a member of the same community to facilitate collaboration:

> I find just being more personable and being part of the school when there are duties that need to be done in the school, simple things like hall duty … if you stand out there in the hallway with the regular ed. teacher you start to relate to them. And I find that to be the best way to have a relationship with the general ed. population … to be a part of the school, not just be separated from the rest of the school…. Simple things just like hall duty between classes and things like that and you are talking to the other teachers. I found it makes a world of difference.

Second, teachers reported that using strategies to make the AT easy to understand and implement in the classroom made teachers more receptive to collaboration. One special education teacher reported, “The easier you can make the use of AT with regular ed., the easier it is to incorporate it within the classroom.”

Third, interviewees indicated that joint training with special education and general education teachers helped to bridge the divide. One teacher reported that “school-wide training for everyone helped, because that way we [special educators] didn’t have to teach them [regular educators] how to use it. They got the same training that we did.” Another teacher reported that her school district used staff development sessions as opportunities to “share the ways that we think AT could be used in the classroom so a teacher who has a special education background might be able to envision how AT could be used and could provide that information to a regular education classroom teacher.” Joint training not only laid the foundation for future collaboration by providing all teachers access to the same information about potential AT devices, but also allowed teachers to brainstorm potential AT implementation based on the training content.

Finally, many interviewees targeted teachers’ positive attitudes toward the use of AT in the classroom as a powerful collaboration facilitator. Specifically, teachers indicated that one of the first steps to collaboration was creating an atmosphere where general education teachers embraced AT with “open arms” or were “quite willing” to work with special educators to embed the use of AT in classroom activities. Unfortunately, several teachers reported that their coworkers had negative attitudes toward the use of AT, collaboration, or even the basic concept of inclusion. One teacher reported that the general education teachers she worked with preferred the special education personnel to “take care of” AT-related matters. Another teacher found that attitudes toward collaboration depended largely on the teacher’s level of comfort with individual student disability and AT devices. (See the section “Teacher-Reported Barriers to Collaboration” for a more detailed discussion of this attitude.) Interviewees also noted that both special and regular educators have a responsibility to create an atmosphere of trust and cooperation.

**Staff Participating in Collaboration**

Based on teacher reports, a wide variety of individuals participated in collaborative efforts. The majority of interviewees reported that the special educator and general
An educator collaborated to plan and implement instruction using AT devices. Some teachers reported including paraprofessionals in the process because these were the individuals who spent instructional time with the student across educational settings and throughout the school day. Teachers also reported collaborating with related service personnel (i.e., occupational therapists, speech/language therapists, physical therapists, and AT specialists), the student’s teacher from the previous year to plan for the current year, and the next grade-level teacher to plan instruction to prepare the student for future classroom expectations. Finally, teachers reported collaborating with the student’s family members during team meetings.

**Frequency of Collaborative Meetings**

While most teachers did not specify the number of times they met to collaborate with fellow teachers, some provided a clearer picture of the frequency of these collaborative sessions. Collaboration frequency ranged from once a year (e.g., at the student’s IEP meeting) to daily conversations. The meetings ranged from formal (e.g., planned team meetings) to informal (e.g., conversations during student arrival and departure to the general education classroom). The majority of teachers who specified when they met with their collaboration teachers reported meeting on a weekly basis. Not surprisingly, the duration of collaboration sessions ranged from brief, impromptu “check-in” conversations to several hours in a more formal meeting setting. Teachers reported a variety of collaboration models including informal check-in, planned collaboration meetings, team meetings, collaboration mediated by a paraprofessional, communication via email or phone, and written action plans.

**Communication Strategies**

Several teachers provided details about the structure of collaboration – what collaboration “looks like” for teachers. Overwhelmingly, they discussed communication strategies that have proven useful to share information about the student’s progress, identified student needs, or issues surrounding AT devices. The structure of collaborative meetings ranged from informal opportunities to “bounce ideas off of each other” (e.g., discussing issues over lunch) to formal, planned meetings.

**Face-to-face interactions.** Several teachers indicated that they took advantage of informal, brief meetings to “check in” regarding student progress or concerns. While a few special educators noted that they had opportunities to work directly with students or co-teachers in the general classroom and bounce ideas off each other during instructional time, most teachers indicated that they must plan out-of-class time for collaboration. One special educator reported, “The teachers that collaborate with us spend a lot of time outside the classroom working on ideas and how they can help improve [students’] success in the classroom.”

Several teachers reported meeting as teams of teachers. Types of collaborative teams included special education teams, family study meetings, inclusive classroom teams (i.e., teachers, paraprofessionals, and related service personnel), and grade-level teams (i.e., all general education and special education teachers serving students from a particular grade). One teacher explained that “special ed. teachers and the regular ed. teachers have team/grade level meetings we attend so we can find out what’s working, what’s not working, [and] where we need to make changes.” A teacher described his team meetings as:

> Planning time each week that all the teachers meet and collaborate ... it gave a time for me to talk with everybody else about what was working and what was not working. Many times I would go to their classrooms and they would let me know that they were having trouble with a certain activity and needed to figure out something and I would come back down to the AT office and get another device. Or we problem solve; I get some other software then take it back down to the classroom and we could try it so we had a lot of collaboration there between all the people involved.

Formal meetings that were reported included IEP meetings and student assessment sessions where professionals took advantage of this mandatory meeting time to collaborate.

Another strategy described was the paraprofessional collaborating with both the general education teacher and the special education teacher, thus facilitating indirect communication between these individuals. The paraprofessional stated, “They sort of used me as a liaison I guess you would say … I would let them know what was needed.”
Non-face-to-face interactions. Educators also indicated that they used email and phone calls to collaborate. They noted that email allowed them to work around busy schedules and the inability to meet face-to-face. Email allowed teachers to voice concerns, brainstorm solutions, or share information with colleagues who did not have the same schedule. While several teachers reported using email to collaborate with teachers in the same school, one teacher indicated that she collaborated via email with teachers at different schools.

A few teachers reported using written collaboration forms or action plans. One special education teacher indicated that she had the ability to meet face-to-face with the general education teacher and to create an action plan and “talk about what each is responsible for.” However, another teacher noted that she collaborated with colleagues in a non face-to-face format via written materials. She explained:

There is a form that the AT teacher sends me and it is just for collaboration. We do that every couple of weeks, we touch base on what he is doing, how she is meeting his needs, and how he is using it [AT].

Teachers reported using planning forms to share information regarding curriculum content for an upcoming class, modifications or AT the student would need to access the curriculum and participate in the activities, and student progress.

Topics Addressed During Collaboration Meetings

Teachers reported a variety of topics that were commonly addressed through collaboration meetings, informal communication, or written planning materials. Three broad categories emerged from the interviews: (a) preparation of student learning materials; (b) consultation on specific student issues, disabilities, and AT; and (c) training on specific AT devices.

Advanced preparation. Numerous special education teachers reported that one of their responsibilities was to coordinate with general education teachers to prepare materials in advance for class activities. Advanced preparation included programming communication devices, scanning materials into the computer, adapting the environment for greater accessibility, creating or adapting learning materials, and deciding how students would meaningfully participate in group activities. Collaboration with the general education teachers to prepare materials ranged from collaborative planning sessions to on-the-spot coordination during class activities. However, examples also included special and general education teachers sharing learning materials and having common educational and participation goals for the students in their classrooms.

According to several teachers, one of their main tasks was to program devices for the student to use during class activities or for testing purposes in the general education classroom. One special education teacher indicated that it was helpful for the general educator to give her “ample time to know what she is going to be working on, so that I can program the devices in time.” Such programming might have entailed changing the selections on a voice output device, alternating picture symbols for visual schedules or alternate keyboards, adding new vocabulary words to a word prediction program, or creating new computer files for one or more curriculum areas. One special education teacher reported that if he did not have time prior to class for device programming, he previewed the instructional activity and prepared the student’s communication device during class time. He explained:

I’ll kind of look ahead and see, OK, maybe [the student] could answer question number 10. He’s got a switch that has voice output capabilities on it. I’ll step outside or bring a friend outside and we’ll record the answer to number 10 and as [the general education teacher] is asking for the answer for number 10, I’ll kind of raise my hand and she’ll always, because it doesn’t happen as frequently as other kids answer questions, she’ll say, “[Student name], number 10.” So [the student] will get whatever assistance he needs to activate his switch and she’ll validate that.

Another teacher reported that she prepared visuals for the music teacher to use during instruction to facilitate a student’s participation in the group activity. This teacher stated:

[The music teacher] has gotten very much into visual strategies and her lessons are planned with Boardmaker® symbols that either I or my assistant have made for her, and she has Boardmaker® symbols for all the songs in the order that we are going to do them that day.

Another preparation issue involved scanning materials into the computer prior to class for instructional time, review, or testing. One teacher indicated that she and the
general education teacher collaborated during a planning session to:

... talk about the main information that we want the child to retain from whatever the subject that is being taught. Usually I will take it, modify the tests, either the answers or which questions they [the students with disabilities] will respond to, and scan that in and have it ready, just testing them on the information we together have decided on.

While some teachers collaborated during face-to-face meetings on preparation of materials, one teacher reported using a written system to accommodate differing planning schedules. This teacher explained:

[The general education teacher] puts the book in my box, I take it and read through the book. I decide for each of my kids what would be appropriate for them, what is the appropriate level for them on using this book and using this device. Coordinating with the teacher on what she is going to have to ask them [students with disabilities].... When I return the book I write a note.

Clearly, for advanced preparation of materials, device programming, or adapting activities to be successful, general education and special education teachers must take time to communicate well in advance of the instructional unit. One general education teacher described:

I've given her [special education teacher] almost a month notice on the adding .... And I tell her what letters we are going to do, but I usually tell her a week in advance for that ... which makes me have to stay on top of the game because I have to know well in advance what I am going to do.

Information sharing. One frequent collaboration strategy was collaborative consultation, whereby the special education teacher shared expertise on specific student needs or more general information related to disabilities or AT. Some teachers reported that they provided information to the general education teachers about specific student disabilities, how disabilities impact student learning, and the need for modifications and adaptations. This included sharing information with general education teachers about appropriate use of AT in the classroom so that all students can meaningfully participate and access the curriculum. One teacher described the collaborative consultation process as, “explaining to the general education teachers how to use the equipment ... sharing ideas and ways to use it in the classroom, and how much they should be using it.” Another teacher reported that the process involved sharing, “how [students’] assistive technology can be used in the general classroom.... We talk about different ways to use [AT] in the classroom for specific academic requirements.” Yet another teacher stressed that she shared information regarding the purpose of the AT in the classroom, such as accessing academic content or using a device for communication and socialization.

This sharing of expertise led the collaborative team to work together to discuss the challenges the student may face in the classroom and brainstorm solutions. One special education teacher described how she and her collaborating general education teacher “meet after school to talk about progress in general education” and then the special education teacher provided the materials and adaptations the student needed to be successfully included. Sometimes the sharing of expertise between the special and general education teachers was not sufficient, and the teachers had to reach out to collaborate with the AT specialists for additional collaboration. One teacher reported that her collaboration with the general education teacher involved “exchanging strategies, what has and what hasn’t worked, things that we see in the student’s attitude, behaviors, frustration levels ... and then seeking help from the specialists.”

Several teachers explained that the collaboration process often began with the general education teacher approaching the special education teacher with a challenge the student was facing and asking for advice. One special education teacher said, “We offer suggestions for helping the student succeed” [and when they understand why the student is not currently successful we] “provide individual collaboration with that teacher or specifically to that group of teachers” who work with the student. Another teacher reported that the special education teacher she collaborated with “brought it to [her] attention that there was a hearing difficulty and she gave the assistive technology to help that student perform in the regular education classroom.” In this instance, the special education teacher provided access to AT via her consultation.

Device training. Teachers reported providing training on specific AT devices as another facet of collaboration. Such training may be viewed as a type of collaborative consultation, since special education teachers were sharing their expertise about AT to general education teachers and then role-releasing to allow the general education teach-
ers to take ownership of the AT implementation in the classroom. Special education teachers reported that they frequently provided demonstrations of devices. Demonstrations ranged from initially training the general education teacher on device operation to answering questions that arose when students were using their devices in the general education classroom. One teacher explained:

On a regular basis I’m checking in with the teachers … and asking “Do you have questions, are there things that you don’t understand?” Or if they are having a problem with the device they will call and ask, “What do I do?”

Such information sharing and role-release allowed general education teachers to feel ownership of students with disabilities they served in the general education classroom, receive ongoing support and expert advice from specialists, and share a common vision for student goals with special education staff.

**Teacher-Reported Barriers to Collaboration**

Teachers reported several barriers to collaboration, including general educators’ fear of technology or unwillingness to take ownership of technology, lack of time or opportunity to meet, and beliefs about the need for collaboration. Many special educators indicated that they had attempted to collaborate with general educators but had been unsuccessful due to teacher fear of, or discomfort with, AT devices. Some of this discomfort appeared to be due to the teachers’ unfamiliarity with AT, and some stemmed from lack of training in how to use the devices. Several special educators noted that it was unfortunate that the general education teachers they collaborated with were not required or not allowed to attend the same professional development classes they attended where they learned about and became proficient in using AT devices. One teacher explained, “We collaborate together and we talk about it, but most of the implementation is left up to us because they’re still not comfortable doing it.” Such discomfort or fear of technology frequently led to an unwillingness on the part of general education teachers to take full ownership of students using AT devices in their classrooms.

Lack of ownership also stemmed from teachers being unreceptive to learning about, or taking the time to incorporate, technology into their teaching repertoire. One teacher reported:

The general education teacher is somewhat receptive but most of the time does not want to get involved. They do not want to be in charge of it. They don’t want to have to figure out how to use it, what to do … they just want me or my assistant to be there. Just take care of it.

Another teacher explained that her collaboration regarding AT was significantly limited because teachers were not “willing to learn.”

Several interviewees indicated that teacher willingness to incorporate technology into the classroom varied from teacher to teacher as opposed to making blanket statements about all general education teachers. These variations in willingness appeared to be due to student disability as well as the sophistication of the device. One interviewee commented, “It’s more case by case … on how tricky it can be and how open and receptive people are.” Another teacher explained:

It depends on motivation … whether or not the teacher is afraid of it, and how involved the student is, and how demanding their class is. But so far I find that most of them leave it up to me, even when I show them how to use it, which is frustrating ….

Finally, a few teachers reported that a general “lack of time” prevented them from successfully collaborating with general education teachers.

**Lack of Collaboration**

Twenty-two of the 96 teachers interviewed (23%) reported that they did not engage in collaboration strategies between special education and general education teachers. Of these, three teachers’ responses were disregarded because they worked in self-contained schools and, therefore, did not have the opportunity to collaborate with general education teachers. Teachers provided a variety of reasons for why they did not collaborate with general education teachers, including lack of time, belief that collaboration is not needed since the students have paraeducators with them at all times in the general education classrooms, and because students with disabilities are not attending general education classes. Several teachers gave no specific reason for lack of collaboration across programs. Their comments ranged from “I have not had the need for that” to “We don’t really have contact with them [regular education teachers].”
Teacher-Reported Suggestions for Improved Collaboration

In addition to current practices and barriers, respondents provided a variety of suggestions for ways their school or teams could improve collaborative efforts. Their suggestions included (a) team planning time, (b) classroom observation, and (c) awareness.

Collaborative Planning Through Teaming

Several teachers stressed the need to designate teams, and time, to plan lessons collaboratively. One teacher voiced this need by saying:

*I wish that there was more time to look ahead and to see what units are coming up and when’s the next test. So much of that just happens on the sly and I just wish that there was some collaboration time. They talked about reorganizing our school into teams – like a social studies teacher and math teacher and English teacher and a special education teacher work as a core team.*

Another teacher voiced her desire for special education teachers to have the opportunity to “actively participate” with general education teachers as they prepared their lesson plans. Yet another teacher indicated that it would be helpful if time were designated at the beginning of the year to prepare materials, such as scanning text into the computer, that would be needed throughout the year.

Classroom Observation

Other teachers indicated that they would like time for special education teachers to observe in the general education classrooms to better understand the successes and barriers to implementing AT in specific environments. One teacher explained:

*We need more time for specialists to go into regular ed. classrooms and see how students are acting in those environments and see what needs they have, and adapting and modifying the way that AT is used in the real classroom. I think that often students are reluctant to use AT in the regular ed. classroom.*

Observation in the students’ general education classroom could benefit collaborative teams by sharing a common understanding of real-life barriers to device implementation.

Awareness

Another theme among suggestions involved general education teachers’ awareness of student disabilities and the impact disabilities have on the learning process. Several teachers commented that general education teachers felt the specialists were “making excuses for the student” rather than understanding why a particular student required specific modifications, adaptations, or devices for his or her educational success. Suggestions for change included holding professional development and awareness trainings for all school staff regarding disabilities and the need for AT devices.

Discussion and Limitations

Numerous teachers reported using high-quality collaborative teaming and problem solving strategies to better serve students with disabilities who use AT devices. Teachers reported participating in grade-level and classroom teams to plan instruction, present classroom challenges and design solutions, and share expertise with colleagues. Teachers also reported using a wide variety of communication strategies such as written materials, face-to-face meetings, and email in order to facilitate collaborative efforts. In addition, teachers explained that they worked in collaborative consultation roles to share knowledge regarding AT or more general instructional strategies.

Unfortunately, many teachers reported strategies that relied heavily on the expert model (i.e., a one-way, top-down model in which one professional with expertise directs another professional, rather than using a joint decision making model) and described interactions that were not based on shared goals. Numerous special education teachers reported that they were viewed by general education teachers, and appeared to view themselves, as the experts and bore full responsibility for educating students with disabilities and incorporating AT into instruction. While it would be natural for special educators to hold more knowledge about special education services than general educators, many of the accounts were devoid of the collaboration characteristics (e.g., shared power, responsibility, decision making) that would be indicators of recommended practice (Friend & Cook 1990; Rainforth & York-Barr, 1997; Thousand & Villa, 2000).
lack of shared decision making and parity was illustrated in one teacher’s comment that “I can tell them pretty much what we are going to use and how we are going to use it.” While this teacher clearly worked with a general education teacher who was receptive to using AT in the classroom, there did not appear to be an emphasis on shared vision, responsibility, or problem solving.

Overall, there appeared to be a lack of shared responsibility for student instruction as well as the AT that could facilitate student success in the classroom. This apparent gulf between special and general educators was created by a lack of communication, co-planning, or shared goals for student progress. This disconnect was exemplified in one special education teacher’s explanation that, “I have to make sure that I provide services for the child and provide someone who can help and guide them, and the teacher doesn’t have to deal with this equipment.”

Brownell et al. (1997) noted that true collaboration is rarely found in schools, and this appears to hold true for the collaboration between general and special educators regarding the provision of AT services. This observation may be explained somewhat by the lack of preparation teachers receive in their preservice programs. Recent research on special educator preparedness indicates that 47% of special educators who recently attended a preservice program did not feel adequately prepared to collaborate with their general education peers (Study of Personnel Needs in Special Education, 2002). Therefore, it is not surprising that the teachers interviewed in the present study reported on only a few aspects of the essential elements for true collaboration while identifying numerous barriers to implementing collaborative strategies in their schools. It is promising, however, that all the suggestions voiced by teachers were reported by other teachers in the study as successful methods of collaboration currently in place in their districts. For example, a teacher from one district recommended that collaboration could be improved in her school by “having a specialist observe in the classroom to better understand academic and environmental demands.” A teacher from another district described this exact strategy as being currently implemented in her school and facilitating successful collaboration. Because the suggested practices for improvement collected from teachers mirrored the “successful practices already implemented” collected from other teachers in other school districts, it is reasonable to assume that the recommendations are feasible and realistic.

Limitations
Several limitations to this study should be noted. One limitation was the unequal sample sizes of general and special education teachers. Because the interview questions were part of a lengthy interview regarding all aspects of AT service delivery, the researchers felt that the most valuable information would be gathered by interviewing teachers who incorporated AT into their teaching most frequently, which inevitably resulted in a much greater number of special educators providing their perspective than general education teachers. It would have been beneficial to interview an equal number of general and special education teachers to better understand the perceived strengths and barriers from both perspectives.

The second limitation is that interviewers asked a limited number of questions or follow-up prompts (a maximum of three questions) to gather information regarding collaboration efforts. While the entire interview included questions ranging from funding sources to student assessment to family involvement, only a small portion of the interview was specific to teacher collaboration. A more well-rounded impression of collaboration strategies may have been elicited if additional interview questions were directly related to collaboration strategies.

Implications and Suggestions
Training
Both preservice and inservice opportunities that bring together general and special education teachers need to be offered to break down barriers between the two disciplines. Wallace et al. (2002) encouraged general and special education teachers to attend professional development sessions together and reported positive outcomes when this strategy was implemented. Joint professional development not only helps to eliminate feelings of disconnect between special and general educators, it also provides a shared language and knowledge between teachers who can later collaborate on issues they have learned about together. Preservice credentialing programs, for both special and general educators, need to focus greater attention on preparing teachers for collaborating with colleagues (Friend & Cook, 1990; Jackson et al., 2000) as well as establishing a philosophy that makes all teachers responsible for educating all students regardless of the label of the student or the particular area of expertise of
the teacher. In addition, school districts could provide inservice opportunities for teachers to learn about the benefits of collaboration and teach skills needed to practice effective collaboration (Jackson et al., 2000).

Time for Collaboration

Several of the teachers in this study reported lack of common planning and communication time as a barrier. Rainforth and England (1997) indicated that planning for meeting time is one essential element for successful collaboration. Hunt et al. (2001) strongly encouraged the establishment of designated time for teams to meet and several researchers offer suggestions to support collaborative teaming. These suggestions include implementing block scheduling to encourage co-teaching, incorporating early release days into the monthly schedule to allow for joint planning time (Wallace et al., 2002), hiring substitutes to relieve teachers of their teaching responsibilities for a portion of the day, providing teacher stipends to encourage meetings before or after school or before the start of school in the fall, and inviting specialists to attend team meetings on a rotating basis to reduce the number of meetings each must attend (Rainforth & England, 1997).

While there is not a prescribed number of times collaborative teams should convene, teams should meet frequently enough to address concerns in a timely manner as well as hold discussions about issues other than immediate challenges or crisis situations (Thousand & Villa, 2000). In addition to addressing immediate needs, teams should use planning time to designate roles and responsibilities related to ongoing student, teacher, and family AT support (e.g., training, funding, assessment, and maintenance). The Assistive Technology Planner (Bausch, Ault, & Hasselbring, 2006) provides one framework for structuring team discussions and using AT implementation plans.

Shared Vision and Parity

One of the themes that emerged from the teacher interviews is that general and special education teachers often do not share a common vision or goal for students with disabilities. Stainback and Stainback (1990) described an inclusive school as “a place where everyone belongs, is accepted, supports, and is supported by his or her peers and other members of the school community in the course of having his or her educational needs met” (p. 3). This description alludes to a place where a sense of community is felt because there are no artificial boundaries or turf issues separating regular or special education teachers. One step toward greater inclusion, and therefore greater academic and social achievement for students, is for general and special education teachers to collaborate and create a common vision for all students and take ownership of the education for all students.

In addition, teachers should work together as equals, with all team members contributing valuable knowledge. In order to create a shared goal, team members must feel that their contribution is valued by others and abandon established hierarchies created between special education and regular education. When teachers share goals and responsibility for educating all students, pressure is relieved from special educators who may feel that they bear the sole responsibility for creating a successful educational experience for students with disabilities. Through collaboration, special education teachers are relieved of this burden, general education teachers become empowered, and students achieve greater success in school.

References


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