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A Qualitative Study of the Assistive Technology Decision-Making Process

In Four Pennsylvania School Districts

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Introduction

Recent legislation mandates more highly qualified teachers using standards based instruction with students of all abilities in the inclusive setting. As clearly stated in IDEA 1997 Amendments, special education is "a service for children, rather than a place where they are sent" (Smith-Davis, 2003, p. 44), implying students should be educated with their non-disabled peers to the maximum extent possible with appropriate supports and accommodations. This directive was strongly reinforced by recent legal decisions resulting in the Gaskin Settlement Agreement in Pennsylvania. An overview of the case provided by Pennsylvania's Department of Education (2005) states, "The goal of the proposed settlement is to ensure that Individualized Education Program teams consider the regular classroom with supplementary aids and services before considering a more restrictive placement" (p. 1).

As more and more students with exceptionalities are placed in the general education classroom the question of meeting the diverse needs of the students cannot be ignored. The amendments of IDEA require the IEP team to consider the use of assistive technology when planning the individualized education program (Puckett, 2004). Further reauthorization of IDEA in Individuals with Disabilities Education Improvement Act mandates the consideration of assistive technology devices and services during IEP meetings (Wissick & Gardner, 2008). Quenneville (2001) identifies benefits of assistive technology as including academic achievement in all areas, improving self managing strategies such as organization, and fostering social competence with peers and adults. White, Wepner, and Wetzel (2003) assert "advances in

technology have had a direct impact on the individual student's educational progress" (p. 24). As legislation and legal decisions mandate special education and general education teachers to prepare for the inclusion of students with special needs in the general education K-12 classroom environment, an understanding of how Assistive Technology (AT) decisions can or should be made is essential to the success of the inclusion model.

The Pennsylvania Department of Education has mandated new competencies for general education teachers (2008). The mandates require all general education teacher preparation programs to include twelve credits of specialized instruction course work. Three of the twelve-semester hours are required in the instructional area of English as a Second Language (ESL). Nine of the twelve credits are required in the area of special education. Specifically, the state requires a 3-semester hour introductory course and six hours of methods. These new requirements strive to provide pre-service teachers with the knowledge they need to successfully implement the inclusion model.

Shippen, Crites, Houchins, Ramsey and Simon (2005) surveyed 326 pre-service teachers (both general education and special education majors) before and after their course work in a survey of exceptionalities courses. Pre-service teachers' attitudes towards students with exceptionalities increased in tolerance and decreased in anxieties as their knowledge base of best practices of teaching this population increased. Shippen, et. al. and Jeffs and Banister (2006) recognize the need for increased collaboration between special educators and general educators in the field regardless of the model of instruction. Knowledge of researched-based interventions, related services and collaboration strategies are critical for all teachers in the fields of both special education and general education.

The purpose of this qualitative research study was to gain an understanding and insight into the assistive technology decision making process at four centrally located school districts in Pennsylvania. Through an analysis of the data, three major topics emerged that will be addressed in the body of this paper: (a) the procedure for determining assistive technology needs and the dynamics of the decision-making process, b) the cohesiveness of Special Education and General Education programs, and c) major concerns that impact the delivery of assistive technology services.

Methodology

A qualitative case study research method involving the triangulation of data sources (interviews with teachers, administrators, technology specialists, and AT consultants; IEP documents) was implemented to collect and analyze data. Personnel from four different school districts in Pennsylvania and the regional Intermediate Unit Assistive Technology Consultant volunteered to participate in the study (there are 29 Intermediate Units (IU's) in Pennsylvania that serve surrounding school districts; they provide free consultation in the area of assistive technology and can be contracted to provide therapeutic services). All districts were located within thirty-five miles of each other and serviced by the same intermediate unit. Participating districts were selected based on this central location for the reason of investigating commonalities of their policies and procedures.

Participants

Four school districts volunteered to participate in this research. Each district identified team members who participated in the AT decision making process. These team members were

interviewed using questions formulated by the researchers and derived from the Quality Indicators for Assistive Technology (2005). Personnel interviewed included the special education coordinator, educational technology specialist, special education teacher, general education teacher and relevant support staff. In addition, the Intermediate Unit Assistive Technology Consultant was interviewed.

Interview Instruments

Each district's policies and procedures for determining, implementing, and maintaining the use of assistive technology were examined through semi-structured interviews. Researchers conducted individual, semi-structured interviews with the special education coordinator, the special education teacher, the inclusion general education teacher, relevant support staff, the educational technology specialist, and the Intermediate Unit Assistive Technology Consultant. Three sets of interview questions, one for administrative positions (special education coordinator and educational technology support staff) (Table 1), one for teachers and related service providers (Table 2), and one for the IU AT consultant (Table 3), were devised with the guidance of the Quality Indicators for Assistive Technology Services (QIAT Consortium, 2005). Questions for the school districts were then reviewed by an expert in the field of Assistive Technology with 20+ years experience (the Intermediate Unit Assistive Technology Consultant) in the field of special education prior to the implementation of the semi-structured interviews.

TABLE 1.

Questions for Special and General Education Teachers, and Related Service Providers

The following questions are drawn from the QIAT Consortium (2005), Quality Indicators for Assistive Technology Services.

1. What kinds of technology are used in the classroom?
2. For what purposes do students use technology in the classroom?
3. In an IEP meeting, how does the team determine the type of device a person should receive? Which of the following are considered when making a decision: AAC assessment, device trial data analysis, student preferences, student achievement with and without the device, teacher observations?
4. Is there a standard procedure for determining AAC needs?
5. Who makes the decision of what device/service to prescribe?
6. What type of data is gathered and analyzed about the student (e.g., related to educational goals, customary environments) when determining AAC needs?
7. Do you feel comfortable making assistive technology decisions? Are there persons to seek assistance from when making such decisions?
8. Does the school have guidelines for documenting assistive technology needs in the IEP ?
9. How is AT integrated into the curriculum and daily activities of the student across environments?
10. Does everyone who works with the student know their role in supporting the use of the AT?
11. Is the use of a device monitored through data collection?
12. Is clear who is responsible for the set-up, repair, replacement, upkeep of a device?
13. As student transition to another setting, are responsibilities assigned at the destination school or agency? What other things are considered?
14. Does the student participate in the planning process?
15. Have you participated in technology related training? What type of technology related training is available to you?

TABLE 2.

Questions for Special Education Coordinator and Educational Technology Specialist

1. How do you perceive your role as it relates to collaborating with regular and special education teachers?
2. What kinds of technology are used in the classroom?
3. How comfortable are you with AT and what kinds of devices have you worked with?
4. Does the agency have written procedural guidelines related to AT services or technology in general?
5. Are there personnel that specialize in AT services?
6. How is AT included in the technology and planning budget? In the strategic plans?
7. Does the agency provide ongoing learning opportunities about AT for staff, family, and students? What kinds of training opportunities are available?
8. How is AT use at the school monitored?

TABLE 3.

Questions for Assistive Technology Regional Coordinator

1. Where does the inventory at the IU come from?
2. Is it strictly for borrowing and for how long can devices be borrowed?
3. What kind of funding does the IU receive for purchasing devices?
4. What is your job?
5. What other staff assist you?
6. What schools do you work with?
7. How do schools contact/communicate with you?
8. How do you go about making decisions about what devices to use with someone? Do you participate in IEP's? Are there standard evaluation formats or data collection systems that you use?
9. What is the turn-around time for acquiring devices?

Interview Procedures

Consistencies and variances existed across all school districts in terms of their interview groupings. All special education coordinators, educational technology specialists, teachers, and related service providers were interviewed separate from another professional category. All interviews were conducted during a regular school day with an interviewee – interviewer ratio of 1:2 or 1:3.

Researchers requested interviews with the special education coordinator and educational technology specialist (specifically, the director of technology) from each school. In all four school districts, the special education coordinator was interviewed privately by two or three of the researchers. In three of the four school districts, the educational technology specialist position was filled by one individual. In these schools individual interviews were conducted with a 1:2 or 1:3, interviewee – interviewer ratio. In the fourth school district the terminology "educational technology specialist" was interpreted in a manner which encompassed 3 individual staff roles. Two individuals' responsibilities included providing and maintaining the districts hardware devices and software programs. The other individual's role was to support the use of new instructional technology implemented in the classrooms and provided by a "Classrooms of the Future Grant." These three individuals comprised the interview group for this school's educational technology support staff group and were interviewed simultaneously with an interviewee – interviewer ratio of 3:2.

The second category of interview groupings included Special Education Teachers, General Education Teachers (of the classrooms where observations were scheduled), and Related

Service Providers involved in the IEP team for the identified child. Each of these interview groupings varied between school districts, but there were at least 2 interviewers in each session.

A third category of interview groupings included the Intermediate Unit Assistive Technology Consultant. He was interviewed with an interviewee – interviewer ratio of 1:2.

Data Analysis Procedures

All interviews were audio-taped using a digital video camera with the lens cap on. Digital files were uploaded and converted using the Prism conversion plug-in software. Files were then transcribed by graduate assistants and uploaded to N'Vivo 7 qualitative research software.

The triangulation of data sources occurred to reveal different perspectives and verify practices related to the planning and use of assistive technology. Analysis of these data revealed the topics listed under the Purpose of this article. The triangulation of data sources occurred with the conscious effort to eliminate observer bias and reveal authentic patterns of interactions with regard to the selection, implementation, and evaluation of assistive technology used by students with disabilities in inclusive settings.

Coding Procedure.

Three researchers identified and defined codes, independently coded identical selections, and met over an 8 hour period to refine code descriptors prior to beginning the bulk of coding procedures. The researchers randomly selected a transcribed interview (School 2, Interview 1) and independently identified possible codes. Researchers then met to discuss the codes and came to agreement on ten initial codes to be used. The researchers then re-coded the first half of the same interview independently and met to discuss the justification for each coding. This led to

further refinement of the definitions and an additional code. The researchers then independently coded the second half of the interview and discussed justifications for each code. Again, definitions were refined and the final version of eleven major codes was agreed upon (Table 4). Each interview was then coded independently by one of the three researchers. Codes were then compared and analyzed seeking to identify themes revealed by the data using N'Vivo 7 Software for Qualitative Research. Summaries of each code were sorted and researchers then identified major threads from each code. These threads, together with the coded transcripts, were then analyzed and three major topics emerged that form the basis for this paper.

Table 4.

Interview codes

1. Budget: Information regarding use of money, access to money
2. Request for equipment process: Requesting a specific device already identified as being needed
3. Identifying AT needs/devices: Process of determining AT needs or what device or equipment a child needs (via conversations, assessments, evaluation, meetings)
4. Personnel: qualifications and responsibilities
5. Policy: Standard procedures and explanations of them (e.g., strategic plans, tech plans, chain of command); reference to stated or written policies
6. Technology Used: Types of hardware, software, and internet resources referenced in data
7. Frequency of technology use; monitoring use; trials of specific technology; why and how used
8. Professional Development: Reference to technology training for teachers, staff and families
9. Barriers/Problems: Specific reference to a problem or barrier to technology use or access
10. Staff Attitudes: Specific reference to positive or negative attitudes about technology by staff
11. Communication/Collaboration: Means by which ideas, information, and need for assistance are conveyed; Collaborative strategies, teaming

Results

Procedures for identifying Assistive Technology Needs and the Dynamics of the Decision-Making Process

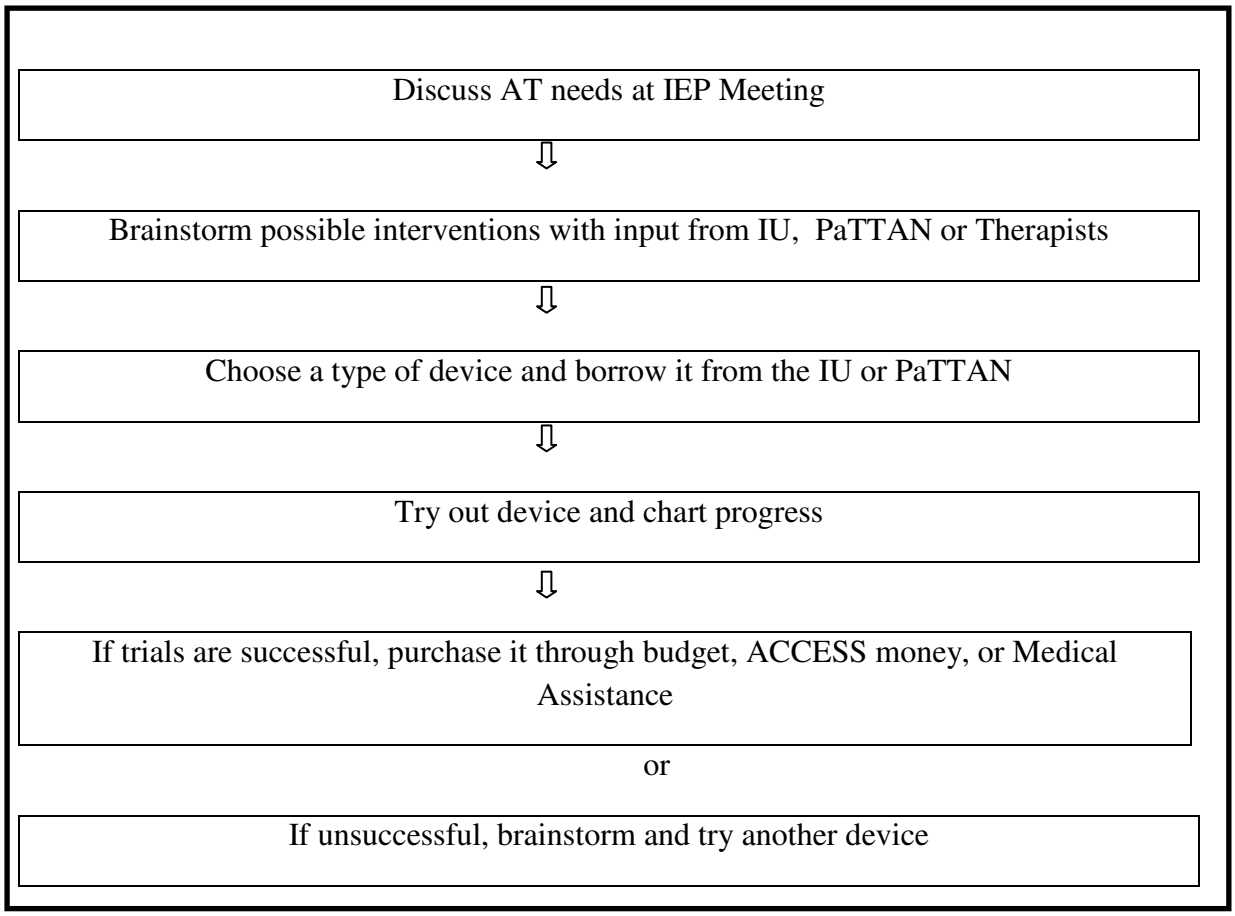
General procedure for identifying AT needs.

Generally, the process for identifying AT needs involved a team approach with the director ultimately responsible for acquiring the device. Figure 1 provides an overview of that process. It generally revolved around IEP meetings. The IEP team would meet and discusses the child's needs. Relevant related service personnel attended (e.g., PT, OT) along with teachers, parents, psychologist, child (in some cases), special education director and local school representative. The team reviewed the evaluation report and identified assistive technology needs. They usually identified "features" of a device needed for a child based on input from the IU Assistive Technology Consultant or the Speech Therapist. The features of the device might be identified rather than the name of the device for two reasons. One, the team would want to make sure a child was successful with a device before identifying it by name. So unless there was already data showing that a device was effective for a child, they would want to leave room in the IEP for changing their AT recommendations. Second, as related by the regional IU Assistive Technology Consultant, once a device is identified by name in an IEP, if it is damaged it must be replaced within one day. However, if it is identified by feature, it can be replaced by "similar" devices if damaged.

After the team made a recommendation on a trial, the special education director or the speech therapist generally contacted the IU or PaTTAN (Pennsylvania Training and Technical

Assistance Network) to borrow a device. Once the device was acquired, teachers and aides would receive training on the device from the speech therapist or Intermediate Unit Assistive Technology Consultant. Often it appears that the aide might have the day to day responsibility of directing the child's use of the device. While in the trial phase, staff would keep data on the child's use of the device. Parents would be encouraged to use the device at home. If the trials showed success, then the director would try to purchase a device usually by using money budgeted to special education and then seeking ACCESS (medical assistance money) reimbursement. If a device trial did not show success, the team would discuss alternative

Figure 1. Decision making process.



devices and go through trials again. If a child needed a device outside of the IEP time, the school would brainstorm with teachers, speech therapist, parents, and the IU on a device to try and then borrow it without going through the IEP process. When trying out the device, there was a trial and error process, but, according to staff at all the schools, not a standard assessment tool. However, all schools stated that they did collect data during this stage. The Intermediate Unit Assistive Technology Consultant said that he had never had a device monitoring data sheet returned to him from staff. On the other hand, at School 1, the IEP provided in the study did call for tri-weekly graphing of a student's AT progress using Performance Tracker software. Generally, once a device was purchased, it appeared that data collection fell off. While all the schools followed the same basic procedure for identifying devices, there were differences in execution.

How AT decision making varied across schools.

School 1: Decision making at School 1 was the most dynamic of the four schools investigated. All of the staff interviewed had a positive attitude about their teaming process and, with one exception, had positive attitudes about technology. The Special Education Director met once every three weeks with teachers and the psychologist. She viewed her role as supportive of teachers and she saw herself as a problem solver. She stated, "I need to work with the teachers so that they can support the students. I have to listen to them a great deal. Many times I end up following their lead and what their recommendations are…when they come to me with their concerns, they have a student and they think they have a need. I'll often times explore what they are asking for, or explore something similar because they are with the student all the time…" Statements by staff indicated they were comfortable with the Director and had a positive working

environment. The Speech Therapist mentioned that the Director, "…is a fabulous advocate for technology, and more so she is an advocate for anything that will benefit the students." The general education teacher stated, "I think people here are very caring." On inclusion, he stated, "…I do think one of our strengths is that inclusion has been embraced. I think it was a lot of people, and I think it is mostly the people who work here." When discussing the time and energy involved with trying out AT in classrooms, the special education teacher stated, "It doesn't fall on one person's shoulders in the whole building… the regular ed teachers, they know we are here, and we know we'll all eventually get there together in the end. So it is not on one person's shoulders solely."

The process for identifying AT needs involved a team approach with the Director ultimately responsible for acquiring the device. A Speech Therapist on staff took the lead in identifying AT needs. As she pointed out, "I am … the teacher of the hearing impaired. I am also in charge of obtaining augmentative communication devices for students with special needs for the district." The IU Assistive Technology Consultant was her and the Director's main contact for borrowing a device. She referred to him as someone who was, "…a tremendous help with suggesting devices that I might not be familiar with and bringing in and showing myself and then the team how to use it." Once borrowed, the Speech Therapist would assess using, "…my own kind of list," as opposed to a formal checklist. Once a device was chosen for purchase, the Director would purchase it. Ordinarily, she would keep a certain amount of money in her special education budget reserved for assistive technology and use those funds for purchases. Beyond that, she would seek ACCESS reimbursement (i.e., 50% reimbursement). In some cases, she would go to the Board of Directors to ask for more money if she had exhausted other avenues. Staff expressed the view that she would get whatever was needed. As the Speech Therapist

remarked, “Mrs. __ is wonderful at purchasing it for the student.” The Director stated that cost was not a factor in her decisions: “I do not look at the budget when I have to get a device. I look at what the child needs. That is it. That is the priority.” Overall, all the staff seemed to have a positive attitude about their process and their ability to get the technology they needed.

School 2: The dynamic at School 2 was less team oriented and more passive than at School 1. The Director at School 2 has the dual role of Special Education Director and Director of Curriculum. She saw the two positions as interrelated to their approach of individualized and differentiated instruction for all learners. Her office was located at a building located away from the school grounds, so she was not as accessible as the Director from School 1, who was located in a school building. She met monthly with all teachers and tried to attend department meetings. In interviews with staff, she was rarely mentioned by name. When discussing the process for choosing a device, the IU personnel were mentioned several times as the primary experts. The Director stated: “We rely very heavily on each of our experts from the IU to help provide that consultation service to us.” There was not an in-house Speech Therapist that took the lead on Assistive Technology. Teachers referred to choosing a device based on “teacher input,” and on what worked in the past. They mentioned a “team effort” with therapists having the most influence, and charting student progress to see how they respond to a device. Beyond that, the two teachers that were interviewed had very little to say about the process. The general education teacher had not had very successful experiences with technology. She had several computers in her room but stated that none of them worked. She noted that she had wanted an FM system for a student in the past, but it was not approved because, “…they are very, very expensive…and there is no one to repair them.” When asked to be interviewed, the special education teacher said, “Well, I don’t have anyone who uses technology.” The Director also related that the special

education teacher had asked for a Smart Board in the past and she turned in down because she thought there were better alternatives. The Director also stated that she no longer allowed staff to order software for their classes because they were getting programs that didn't always work on the older computers they had in the classrooms. In general, the staff at School 2 did not convey a sense of teamwork and were not enthusiastic about technology.

School 2's process of borrowing a device and purchasing it was similar to School 1. One difference was that the Director felt that other schools were taking better advantage of ACCESS money and as a result she was sending an assistant to another district to get some training on it. The Director stated that purchases were made through either the special education budget, ACCESS, or in some cases, private organizations identified by the IU Assistive Technology Consultant. When asked about getting the devices that she wanted, she stated that she had a better chance of getting a "low tech" device approved and when discussing a higher end device, she said she wouldn't get the "Cadillac" version but one that had similar features "without all the bells and whistles." This wasn't an atypical attitude as all the schools had to deal with budgetary restraints. However, the sense of 'getting whatever it takes' that prevailed at School 1 wasn't evident at School 2.

School 3: Decision making at School 3 appeared typical with a few variations. A goal of the school district was to initiate or increase inclusive practices across the K-12 grades. The Special Education Director stated her "…role was to enforce the inclusive setting for special education teachers, the general education teachers, and for the students." The mechanism to do this was through the IEP teams and the child study teams. She stated, "It is my role to make sure that we have child study teams set up…I need data…to see where these children are." This goal was

reflected in the comments by the two special education teachers, as well as through inclusive practices implemented in their classrooms. A new class for children K-2nd grade with autism had recently opened in the elementary building. Although it was a self-contained classroom, the teacher developed ways to include her students in specials (i.e., art, music, and computers). Co-teaching at the middle school was also new this year. The learning support teacher co-taught with the English teacher and provided learning support for students in biology, social studies, and languages. This district provided services to students with severe disabilities indirectly through the Intermediate Unit multi-disability classroom located in the middle school.

Overall, all school staff interviewed were positive regarding the use of technology. Although the Director of Special Education valued the use of technology and strongly supported and encouraged her teachers to use it, she personally didn't "have the opportunity." Both special education teachers had a course related to assistive technology; however, they indicated they needed to learn more about technology that would benefit individual students. The middle school special education teacher had tried to help general education teachers see the value in permitting students with handwriting problems to use a computer but had been met with some resistance. She stated "…honestly I think they just don't understand. They just don't understand!" However, her general education co-teacher recognized the benefits for the students and indicated he was comfortable making decisions "where a student needed to type something or would benefit from writing things up on the Promethean Board rather than to fill it out on paper…but if the student needs other special things that I don't have in my classroom…I would want someone's input on it." The district technology staff believed they were there "to help all the teachers." Although the technology repair person indicated he worked with all teachers, the technology coach collaborated only with general education teachers that were part of the technology grant "…and

special education teachers are not at this point a part of the grant." The special education staff handled issues related to assistive technology.

The process for identifying AT involved an informal process that relied heavily on the IU Assistive Technology Consultant. When asked to elaborate on the procedural guidelines and the process of getting AT for students, the Special Education Director stated, "If I needed any assistive technology, I would get in touch with the IU." According to the special education teachers, the IU Assistive Technology Consultant provided recommendations on appropriate technology and loans of devices for trials. The OT and PT from the IU provided different devices. Prior to the IEP meeting, the special education staff explored AT options and availability of AT devices. They considered the likelihood of having a device approved for purchase prior to officially recommending it. According to the special education teacher, "I would say that is a part of the information guidelines. Just because I wouldn't want to put something into the IEP and then find that we are not able to provide it." The Special Education Director confirmed this informal process, "The dynamic is they come to me and I have to go to the superintendant to get it approved." Both the Director and special education teachers indicated that, "If a child needed a form of AT, resources are available." Based on data collected to determine need, special education teachers, the speech therapist, PT and OT make recommendations at the IEP meeting. Teachers observed and monitored students' progress with AT. Usually it is after observations confirm the appropriateness of the AT that the device was purchased using ACCESS funds.

School 4: The climate of this school was child centered and collaborative. Factors that influenced technology decisions included "student preference, student achievement with or without the device, and teachers' observation and trial data." According to the Director of Special Education the ultimate decision was made by "…the IEP team. We really take the input of all individuals," including the parents, "…who are viewed as important stakeholders." The decision is "…based on a consensus. In this district we value everyone's input."

For many of the children in the primary self-contained classroom, AT devices were brought with them from their early intervention preschool programs. Information from the Early Intervention program and child records provided useful information. Since most of the children in this particular classroom had communication disabilities, the speech therapist played a major role in recommending AT devices and collecting trial and/or progress monitoring data. The occupational therapist was also a valued team member ("she sees something every week that we could be adapting. So we are always adding different adaptations"). After the team decided on a particular AT device, trial data was collected and reviewed to determine if the device "…works for the child." According to the Special Education Director, they "…revise the IEP to include that as a part of their assistive technology needs." The trial equipment was often obtained through IU or PaTTAN equipment loan programs. According to the Special Education Director, the paraeducators played a significant role in helping everyone understand whether the technology was or was not working the child.

The IU Assistive Technology Consultant, a key resource for the district, provided AT recommendations, conducted on-site training for the staff, made repairs on loaned equipment,

and loaded software on computers. According to the Technology Director and Special Education Director, the IU Assistive Technology Consultant worked closely with district technology staff.

After the selection of the AT device, the speech therapist worked with the family to obtain Medicaid and ACCESS funds for the device. In most cases, the district obtained the device through purchase or loan for all children. The Director of Special Education stated, "It is all district or IU, parents do not provide any of it." The speech therapist and special education teacher believed they would get the devices they needed, "We are never burdened by budget issues. It is pretty much what does this kid need and then we all get together and figure it out."

Implications: While each school followed the same basic process, there were differences in execution and dynamics. The most vibrant school, School 1, had mutual trust among staff and a working relationship with a receptive and problem-solving Special Education Director. Their interviews revealed a desire to find the right assistive technology for their students. And while they did rely on the IU Assistive Technology Consultant, they also had a Speech Therapist that was very involved in the process of acquiring and maintaining devices. Generally, they appeared to be pro-active in dealing with assistive technology issues and believed they would be able to get whatever device they needed. In contrast, School 2 staff seemed to have a more passive approach to technology. There was a strong reliance on the IU Assistive Technology Consultant and some history of rejection when it came to acquiring technology by staff. They did not convey the sense that they would get whatever they needed. School 3 staff was positive about AT and wanted to learn more. Their director supported her staff's use of it but personally was not involved with it. A difference between School 3 and the other schools was that when it came to identifying a device for an IEP, staff and the director were both up front in saying that they

would want to get approval for the purchase of a device before putting it in an IEP. So budget considerations could influence the type of device that was recommended for a child. School 4 was similar to School 1 in that there was a strong focus on building consensus and considering everyone's input. Also, they had an attitude that they would get whatever device they needed. And, as with all the schools, there was a lot of reliance on the IU. Overall, the ingredients for a vibrant, pro-active process seem to be: teamwork, support by the director, faith that they could get the device they needed, a knowledgeable director that listened to the staff, and stronger on-site AT support through the services of a speech therapist.

Cohesiveness of the Special Education and General Education Programs.

Interviews with staff revealed that, with some exceptions, the Special Education and General Education programs operated separately in terms of budgeting and technology integration. The budgets for special education were separate from the general school budget. Part of the reason may be logistical, as special education can tap into outside funding that is unique to its services (e.g., ACCESS, private organizations for persons with disabilities, IDEA funding). However, the separate budget has contributed to inequalities in some areas. For example, at School 1, the general budget provided for new Smartboards and projectors for "every" classroom; however, special education classrooms were excluded. Similarly, all teachers were provided with laptops except for special education teachers. When a curriculum was purchased, special education had to purchase their own. The Director's response to this was, "We have worked so hard to try to include the kids and make an inclusionary setting, but we are still walking two different paths…and it is something that I don't know how to fix." School 2 did not have the same frustration on this possibly because their Director was head of special education and general education curriculum. They did have separate budgets, however. Little

communication occurred between the School 3 Director of Special Education and the Director of Technology regarding their budgets. According to the Technology Director, "We kind of all did our own thing," when discussing technology budgets and strategic plans. The School 4 Special Education Director did not know if assistive technology was included in the district wide strategic plan, nor was the funding for assistive devices included annually in the special education budget. They relied heavily on ACCESS money for AT. At all four schools there was a clear separation of the two budgets. And at Schools 1, 3, and 4, the planning for the budgets was done independently so that the two programs did not know of one another's plans.

A second area of separation was technology. Technology specialists from each school were interviewed. While they did support software and computers for all classrooms, none were involved with assistive technology. The School 1 Technology Director was available to everyone for generic needs but said she had not been involved with assistive technology questions. The School 2 Technology Director stated that his position was "…basically nuts and bolts," and that he didn't "have a lot of experience with assistive technology." The School 3 Technology Director stated, "We don't really work with special education teachers on anything different than we would regular education teachers." According to him, less than 10% of the teachers received new equipment this year, all of whom were regular education teacher. Although the School 4 Technology Director was knowledgeable about assistive technology as a parent with a child that had disabilities, her role was to "manage" general technology for the school, excluding assistive technology. She stated "the IU had taken over the role of assistive technology."

Implications: The schools are becoming more inclusive in terms of special and general education staff working more closely together and more students being included in the general education classrooms for greater periods of time. However, the shift toward a more inclusive

model of education has not reached the infrastructure level of budget and technology. As classrooms become more diverse and integrated, and teaming becomes more prevalent, the lines become blurred as to who provides various services to the students. General education teachers might spend time supporting students with disabilities and special education teachers might spend time helping students without disabilities. On the front lines of teaching, inclusion and sharing of resources is beginning to happen to some extent in all of the schools. Yet, the model has not changed at the infrastructure level as budgets are negotiated separately and technology support for general education is on-site but for special education remains largely the domain of the IU.

Major concerns and implications.

Four major concerns emerged from the data in this study. They were: money, overdependence on the IU for assistive technology assistance, how aides are used, and a lack of standardized assessment and monitoring procedures. Every school expressed some level of frustration with finding ways to acquire or pay for assistive technology. There is not a seamless process to acquiring funding. While there are several avenues for acquiring devices, none are guaranteed sources. The School 1 Director related that the "…burden of costs is really heavy for special education." And she noted how Medical Assistance may deny paying for a device because, "… it is the school's responsibility to provide what they need for their education. It's a battle between the Department of Welfare and the Department of Education that goes on all the time on everything." She states at one point, "The problem is getting the devices. It is so hard to get some things from PaTTAN. Then you only get them for a few months, or they don't work. It's really difficult." The School 2 Director discussed the challenges of tapping into resources, "I

wish we had more funding, because it is the biggest barrier to education today. Not only special education, but general education as well." In talking about acquiring specific devices, she said that "…the school district is left with the cost. That is the unfortunate thing. It is a high need area and our budget has gone down year after year, but we are left paying the bill." According to the School 4 Special Education Director, "…money is always going to be a factor in AT because you don't have the funding." With regard to AT, she stated "I don't budget every year. We budget for maintenance of FM systems and hearing aids."

The difficulty of tapping into resources seemed to be a perennial problem that was unavoidable. The implication of this is that every special education director needs the knowledge and skills to negotiate the funding network if the school is to successfully acquire the assistive technology necessary for their students.

A second issue that emerged from the interviews was that the IU Assistive Technology Consultant was overused. All the schools referred to this one individual quite regularly when discussing how they decide what device to get and who they consult with to assess and sometimes troubleshoot problems. The IU Assistive Technology Consultant does not charge for services as he is entitlement based. He is consultant to 17 school districts as well as to special IU classrooms. When describing his job, he said that he now consults with those who call on him via email or phone usually. He does not approach schools or volunteer if he is not solicited due to a lack of time. School 1 has an in-house Speech Therapist that handles a lot of the assistive technology needs, but the Director and the therapist both referred to the IU Assistive Technology Consultant as a contact and as being a "tremendous help with suggesting devices…" He also provided training on how to use devices that the therapist was unfamiliar with. At School 2, the

Director referred to consulting him when determining device needs, "We take feedback from everyone, but I would say [he] does that assessment. We rely heavily on him to say, '…what is out there? What do you think would work in this case?' And then he will bring up different devices and talk about them at the meeting with the parents and the rest of the team. Then we will say what we feel would work best. Then [he] investigates it for us and gives us costs and checks out everything. And then we can start helping with the funding, will medical ACCESS pay for it." In School 3, the IU Assistive Technology Consultant is "the first person called." He was contacted for anything related to assistive technology, including requesting equipment, maintaining an AT inventory list for the district for state department audits, consulting on an appropriate devices for specific children, and repairing IU equipment on loan to the school district. At School 4, the Director referred to the IU Assistive Technology Consultant as "our main guy. When a kid needs a device he really, I don't know how he does it, but he schedules time to come in and load the software on the computers, he works with the technology specialist here making sure that he is able to load those programs onto the special computers. Then it's just training, he comes in after school and trains teachers to use different devices."

This over-reliance on one individual is an indication of a lack of on-site expertise. While it is good that schools tap into existing resources, their own lack of knowledge raises concerns about how thorough they are at identifying the needs of all students with disabilities or properly monitoring students that rely on AT. The IU Assistive Technology Consultant said that most schools have the attitude that assistive technology is the IU's responsibility. He suggested that each school assign one person, possibly a Speech Therapist, to serve as the local assistive technology specialist at least for ½ day per week. Another avenue might be to employ more help from the on-site technology specialists.

Related to this is that schools often rely on the least trained person to work with the student that relies the most heavily on assistive technology. The IU Assistive Technology Consultant, when referring to who handles the tech needs of children with the most severe communication problems, said, "Unfortunately, it is more the teacher aid, the person working directly with the student. There are a number of reasons for that, but a lot of it has to do with the time commitment and the fact that there is a mentality that if the child has an aid that the aid is going to do it all. That has been a really troublesome spot in the special education field. We think that the solution to a lot of kid's problems is to give them an aid." Currently, most aids require only a high school diploma, though some districts in the state have started to require they pass a math and reading test. The special education teacher in School 3 used the teacher aide to help her students transition to other settings, "Until they are able to tolerate things in that situation on their own, an aide will go with them. So if their assistive technology were to go, the aide would be responsible for that." In addition, "paraeducators in the room do the paperwork for billing ACCESS." In School 4, the aide played a significant role in helping everyone have an understanding of the assistive device, "The aide goes into the general education class with the students so she is able to facilitate between the teachers, the types of activities that are going on, and what types of things they assist in preparing for."

The use of aides may compensate for the lack of time and human resources. Inclusion of students with more demanding needs requires collaborative planning and teaming strategies than might be required in a self-contained classroom. Teachers must skillfully negotiate interactions within the inclusive setting without drawing too much attention to the child while also making sure the child is involved in the learning process and not a passive bystander. Monitoring and

prompting the use of an assistive device adds to the demands on the teacher. To put this responsibility on an untrained aide is not always in the best interest of the student.

A fourth issue was the lack of standardized procedures for addressing assistive technology. All the schools kept data of some kind when in the trial phase of a device. However, none identified a formalized tool. School 1 referred to using tally marks in a book to monitor how often a student was not understood, and in his IEP the Speech Therapist called for tri-weekly graphing of his use of a device. But the staff never alluded to any type of formal tool when asked specifically if they used one. The Speech Therapist said, "I just do my own kind of list." The special education teacher in School 3 indicated she monitored devices using antidotal records in addition to the built-in progress monitoring system of the DT Trainer and Compass software. Although some students used the Touch Screen and an adapted mouse, she stated, "I don't really collect data on that." In School 4, not all devices were monitored but those that were monitored were identified in the IEP. The speech teacher and special education teacher monitored the use of the communication device as part of progress monitoring. The special education teacher stated, "Two students have a vision goal using the touch screen so that is progress monitored. The handwriting is monitored through the OT." So data was collected at the schools but there was no uniformity in the tools used within a school or across all the school districts.

The use of a standard tool for AT assessment and monitoring across all school districts and common access to that data would allow schools to compare the effectiveness of various AT interventions (outside of their often stated practice of using trial and error) and more effectively plan for what devices to prescribe or try with individual students. In addition, an online database

of the assistive technology available to schools would increase staff understanding of what is possible and what is readily obtainable.

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