



**Family Center on
Technology
and Disability**

FCTD Conference Series: Integrating AT Research Into Practice

September 1 – September 29, 2006

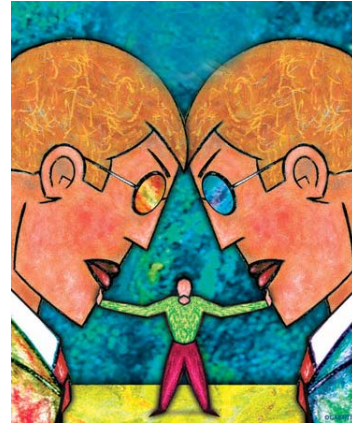
Integrating AT Research into Practice

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EXPERT'S CORNER

Introduction

The demand for research-based outcomes that inform assistive technology practice is greater than ever. However, despite years of effort and federally-funded technical assistance, integrating research results into practice remains a great challenge. Even though practitioners are hungry for knowledge about best practices, it is often difficult to locate and implement research that can be applied practically in the classroom or clinical setting.

Throughout the month of September, Margaret Bausch and Melinda Ault, researchers with The National Assistive Technology Institute, will lead a discussion exploring the relevance of research to everyday practice and the need to make research more accessible to professionals in the field.

The moderators will also share the findings and implications of The National Assistive Technology Institute's six-year research project which examined factors related to the planning, development, implementation, and evaluation of AT services in schools across the nation.

We would like to hear your perspectives on the topic of integrating research into practice. What problems do you encounter when searching for and/or implementing research into your practice methods? What kind of research would be of value to your practice? What can be done to improve the availability of research? We welcome your questions and experiences in the discussion.

Experts' Perspectives

Jeanne Bowman

When parents and school staff have disagreements, we need to think big about who we call on to hear our stories from many points of view and help us keep a perspective that puts the needs of the child first. Alternative or appropriate dispute resolution programs include formal and informal mediation and IEP facilitation and recognize the need for a process to bring families and schools together and for structures that honor passion yet keep us on task with our students. We all get it

wrong, make mistakes and misunderstand at the IEP table now and again. Assistive Technology issues can dramatically increase the complexity and intensity of these conflicts: one lost equipment order and the team is in big trouble.

Conversation at our schools is the first step in preventing and resolving conflict. If things are tense at school, as a parent we may want a support person with us, be that a friend, a trained parent volunteer, an advisor from the community (in person or by consultation), or a friendly administrator. Often problems can be resolved by talking with a dispute resolution specialist trained in mediation skills from within the district. A good mediator/facilitator may act informally: this could be a teacher, administrator, community mediator or parent training and information center staff. The goal is to bring everyone to the table, reflect on the requirements of law, affirm concerns and look at unmet needs that feed a conflict.

Early dispute resolution can give us a way to keep talking while we work it out. Pointing fingers over lost purchase orders may not be effective. Trust will need to be re-established. Supports for negotiation efforts may range from conciliation meetings, to solutions panels, to informal mediation, to formal mediation and resolution sessions. A mediator can also be invited to act as an ombudsperson.

A disagreement on at an IEP about assistive technology assessment, equipment, resources, training for staff or parents, follow up and follow through may mean friction and high emotion for team relationships. A well trained meeting facilitator can act as a neutral person who provides structure by creating an agenda with the team, establishes ground rules and keeps time. A facilitator also looks for and nurtures positive relationships by checking for understanding, clarifying issues, building measurable agreements and recognizing everyone's efforts. The team creates the ideas to make the new plan and is supported in working together constructively. This bigger picture of bringing in facilitation as a means to mediate could create new paperwork accountability with an explanation of the ordering system. Team trust can grow.

We work in a system with two strikes against it – lack of adequate funding and the expectation that teacher training can cover all the categories of disability in depth. Good teaching is good teaching, but supports to teachers are not always available or known, particularly within the rapidly changing assistive technology arena. As parents– whether we are natural, foster, adoptive, grand, surrogate or court appointed special advocate – we have valuable information about our child. An argument that is solely about claiming a right may set up a win/lose resolution. By asserting a right we may miss a creative solution: one that meets a need, honors the law and creates new possibilities. As we think big, we can creatively use the skills of mediation to keep the IEP process and team focused on meeting the needs of our students who use assistive technology.

Jan Serak & Nissan B. Bar-Lev

Disputes between parents and school districts related to assistive technology can be resolved in a variety of ways. We are committed to helping parents and school personnel understand the various options available to them under federal and state laws. We believe that a thorough understanding of various dispute resolution options will help parents and schools use options that provide the most self-determination (the ability to be able to control the outcome) rather than using more coercive, and often more costly, options with less opportunity for parties to have self-determination regarding the outcome. We also believe that using dispute resolution early in a conflict is important step in achieving a better working parent-school relationship for the future.

We have worked together for 10 years as a team to bring information to Wisconsin stakeholders about dispute resolution – to help them know what options are available, and to help them

understand how to be more effective participants in various dispute resolution options. We believe it is critical to model parent-school partnership– so we are providing this joint overview.

Prior to 1997, options available to parents and schools for resolving disputes related to the educational programs of children with disabilities were to request a due process hearing or to file a formal complaint with the state education agency. Both options involved a third-party neutral in control of the outcome – for complaints (generally the state education department complaint department) and for due process hearings (hearing officer). Thirty-nine states included an option for mediation as part of their state law prior to passage of the Individuals with Disabilities Education Act 1997 (IDEA 97), recognizing the value of the increased self-determination available through mediation.

IDEA 97 shifted previous language of federal special education law from an emphasis on claiming “a right” to something - which often found parents and schools adopting positional, entrenched negotiating stances related to issues – to an emphasis on a “partnership” and more collaborative negotiating...by including a requirement for all states to provide families and schools with the option to use **mediation** for resolving their disputes. Mediation is facilitated negotiation. In mediation, a neutral person, a mediator, facilitates the discussion and helps parties reach their own agreement. Federal law provides that mediation can be used for issues that deal with evaluation, disability identification, placement, Individual Education Program (IEP) or the provision of free, appropriate public education (FAPE). These categories are really very broad and can fit most any issue that comes up related to special education. Certainly, many issues related to assistive technology will qualify for mediation.

Congress expressed its’ intent for requiring the mediation option ...“where mediation is being used, litigation has been reduced and parents and schools have resolved their differences amicably” and “It is...the committee’s strong preference that mediation becomes the norm for resolving disputes. (in Senate and House records).

Mediation is now available in all states. However, state laws vary related to how each state system operates. Perhaps the most significant impact of mediation is the establishment of a collaborative partnership that not only assists in resolving the present dispute, but provides parents and schools with a framework to resolve future disputes.

IDEA 2004 has gone a step further, in an effort to encourage families and schools to resolve their disputes at the earliest stage possible, and has added a new dispute resolution option – the resolution session. The **resolution session** is required to be held between parents and school district representatives when a due process hearing has been requested, unless both parties agree to waive the session and either go to mediation or proceed directly to the due process hearing.

States also vary in the types of early dispute resolutions they offer under their state law or practices. Wisconsin, for example, piloted a **facilitated IEP** option in 2004 in which families and schools could agree to request a neutral external “facilitator” to assist with their IEP process. The pilot was so successful in resolving disputes early that the Wisconsin Department of Public Instruction has continued to fund facilitated IEPs with federal discretionary grant dollars. A number of states also use varying forms of facilitated IEPs, including with internal facilitators (school staff) and external facilitators (not school employees).

Nissan Bar-Lev and I represent two of the three partner agencies have been involved since 1996 with the Wisconsin Special Education Mediation System (WSEMS) in the design, on-going administration and statewide stakeholder training, as part of a state discretionary grant for the Wisconsin Department of Public Instruction. WSEMS is located at Marquette University Center for Dispute Resolution Education.

The three agencies and staff involved in WSEMS are: Marquette University Center for Dispute Resolution Education (Professor Eva Soeka, J.D., Center Director & Private Practice Mediator; Jane Burns, WSEMS Intake Coordinator); Cooperative Educational Service Agency #7 (CESA 7 – Nissan Bar-Lev, Special Education Director); Wisconsin FACETS, – Jan Serak, Executive Co-Director; Nelsinia Ramos, Outreach Coordinator; Charlotte Price, Trainer, all parents of children with disabilities).

WSEMS administers a well-coordinated system of dispute resolution which includes case intake, screening and referral for three types of early dispute resolution options for special education disputes: **mediation, facilitated IEPs and facilitated resolution sessions**. Each of these three processes allows for: neutral intake; use of a trained, neutral third party; and voluntariness. WSEMS currently has a roster of 33 neutrals – who may serve as mediators for mediation cases and as facilitators for facilitated IEP meetings and resolution sessions. A key component of any successful mediation system is the perceived neutrality of its mediators. By federal law, a mediator can not be an employee of a school district or the state department of education. Having a neutral case intake center, at Marquette University Center for Dispute Resolution Education, has been critical to the success of our system. No one outside the Center, including Wisconsin Department of Public Instruction, knows which parents or which schools request mediation. For more information about WSEMS, please visit our website: <http://www.marquette.edu/wsems/>

The tremendous value of using a parent/special educator/mediator team to establish and jointly oversee a state system of dispute resolution cannot be overlooked. The WSEMS team has worked closely for 10 years to establish a nationally-recognized state system of dispute resolution for special education. The WSEMS system of mediation has been very successful, as most recent data shows: 89% satisfied with agreement (N=390); 88% satisfied with process (N=519); 89% would use mediation again (N=515).

An important feature, which has proven to be a cornerstone of success of the WSEMS system, has been our use of an ongoing **stakeholder group** to inform and advise our system. The stakeholder group worked initially to draft language for Wisconsin's state law related to mediation. The group continues to meet annually to review data collected from the WSEMS cases and makes recommendations for improvements in the system. The first stakeholder group included disability organizations, parent groups, parent attorneys, school organizations, school attorneys, legislators and a representative from the Governor's office. The current stakeholder group has added related services representatives, teachers, and others. The stakeholder group continues to endorse ongoing statewide training for stakeholders done jointly by our parent/special educator team. To expand outreach training, thirteen parent/educator teams were trained in 2005 to bring WSEMS training to their regional areas.

We would like to highlight the best resource that we know of related to dispute resolution in special education – the Consortium for Appropriate Dispute Resolution in Special Education (CADRE). CADRE is the national center on dispute resolution, funded by the U.S. Department of Education Office of Special Education Programs. Please visit their tremendously useful website of resources: <http://www.directionservice.org/cadre/> . A comprehensive literature database, extensive resource list, information about state systems of dispute resolution, and upcoming attractions related to dispute resolution. CADRE offers fabulous national conferences on dispute resolution for special education stakeholders, with an upcoming one in early December 2006.

Mediation.

Mediation is best used when: help is needed to settle a specific dispute; impasse has been reached; or when there is a history of dispute between the parents and school. What is great about mediation is that every step of the process is voluntary. You only participate if you want to. You can stop anytime you want to. If a parent requests mediation, the school does not have to agree.

Likewise, if the school requests mediation, the parent does not have to agree to participate in mediation.

The mediator is not a decision-maker like a judge or a due process hearing officer. The mediator helps facilitate and structure discussion between the parties during mediation and does not actually impose a decision or interpret law. The setting for the mediation session is usually one of "structured informality." The mediator helps parties understand how the mediation process works; helps parties decide who will participate in the mediation session. While various mediators use different approaches, a typical session starts with the mediator confirming the agreement of parties to mediate (such as by parties signing an Agreement to Mediate form). The mediator describes mediation process and confidentiality provisions of mediation. The mediator usually does an opening to introduce himself/herself and asks the participants to each explain their viewpoints about the issues. Federal law provides for mediation to be private and confidential so that parties feel comfortable openly discussing any issues. The mediator encourages the parties to work on generating options, helps them assess the various options.

Some mediators use "caucus" – which is an opportunity to meet privately, either with the mediator or with colleagues. The mediator should not share information from the caucus in an open mediation session without permission. Caucus is often used to move the process forward, to let parties vent, to prevent premature agreement, to educate a party with poor skills, to explore settlement options, etc.

If there is an agreement, both the parents and the school sign it. The agreement should outline what the parties feel they will be able to do to resolve the situation. People tend to follow the terms of mediated agreements because they participated in developing them. The mediator can be the "scrivener" – that is, he/she can record agreement points as directed and phrased by the parties, but should not be writing the agreement for parties. This would get the mediator into the realm of "practicing law without a license." In WI, agreement is legally binding, enforceable under WI contract law. WSEMS does not have any responsibility for enforcement of agreements.

While there are no guarantees that mediation will lead to an agreement, often even in process of mediation, the parties may be able to work together to better identify their issues or reach a partial agreement on some of issues, or going through the process may result in their improved communication for a better long-term relationship.

Facilitated IEPs

While not required under state or federal law, the use of facilitated IEPs is encouraged in the *President's Commission Report* – but, was not included as part of IDEA 2004. The Report had an emphasis on early conflict prevention and management - for IDEA to support early processes for conflict avoidance for schools & parents.

In Wisconsin, for example, a facilitated IEP is an option for early conflict resolution that is available to parents and schools. A facilitated IEP uses a neutral trained professional (a facilitator) to help the IEP team with the process of deciding what will be included in the IEP. This facilitation may take place at any IEP team meeting. The facilitated option in Wisconsin is voluntary. If either the parents or school do not want to use a facilitator, a facilitated IEP will not be arranged. The process is free. WSEMS does the neutral intake and screening of the cases and pays the facilitators with their federal discretionary grant from the WI Department of Public Instruction. In some cases, when parties have become very positioned on a certain issue, the intake coordinator may suggest that mediation may be a more appropriate way to try to resolve the issue. In the WSEMS system, results have shown: 96% of participants agree the process will improve future meetings; 86% would use the process again;

A facilitated IEP is often used to help when the school and parents think an IEP meeting will be difficult to manage, as when there has been a lack of trust, if problems are expected with

communication. A facilitated IEP is most effective when requested in the early stages of the IEP process. The facilitated IEP meeting is held at a time and place that is acceptable to all IEP team members and the facilitator. The facilitator helps IEP team focus on developing an effective IEP - **but is not an IEP team member**. The facilitator offers ways to address and resolve conflicts in the development of the IEP; models and helps maintain open, respectful communication among team members; helps team members develop and ask clarifying questions about issues that may have come up in past IEP meetings; maintains impartiality and does not take sides, place blame or determine if a particular decision is right or wrong.

Resolution Session

IDEA 2004 requires that the local education agency (LEA) meet with parents within 15 days of a due process hearing request. The resolution session may be mutually waived; or, the parent and school may decide to request mediation instead. The LEA may not bring an attorney to the resolution session unless the parents bring their attorney. The participants to a resolution session include the LEA, parents, and any IEP team members who have information about the issue that is the subject of the hearing request. Any resolution arrived at must be put in a written agreement and signed. Either the parents or school may void the agreement within 3 business days. The agreement is enforceable in court. If an agreement is reached, the parent can not recoup (recover) their attorney fees. Some states, such as Wisconsin, offer to provide a neutral person to help facilitate the meeting if requested.

Experts' Bios

Margaret E. Bausch



Margaret E. Bausch

Margaret E. Bausch is an assistant professor in the Department of Special Education and Rehabilitation Counseling and Co-Principal Investigator of the National Assistive Technology Research Institute at the University of Kentucky. Prior to joining the faculty, Dr. Bausch was a resource room teacher and spent more than 15 years at UK as a Disability Program Specialist where she was involved in all aspects of research and product development related to special education technology. She has also been involved in the graduate and undergraduate training programs in Special Education Technology. Dr. Bausch received her Bachelor of Science Degree in Elementary and Special Education at Eastern Kentucky University, a Master of Science Degree in Special Education Learning Disabilities and an Ed.D. in Special Education Technology from the University of Kentucky in

1999.

Melinda Jones Ault, NATRI Project Director



Melinda Jones Ault

Melinda Jones Ault currently is the Project Director for NATRI. She received her Bachelor of Arts degree and Master of Science degree from the University of Kentucky in elementary and special education. She is a certified elementary education and special education teacher, was a former classroom teacher, and has worked in educational research for 19 years. Ms. Ault has taught graduate level classes in single subject research design and instructional methods, as well as supervised graduate level practicum students. She is co-author of a textbook on instructional strategies for students with moderate to severe disabilities, and a rating scale of developmental appropriateness in K-3rd grade inclusive

classrooms.

CONFERENCE

Transcript: Assistive Technology Mediation

- **Welcome!** by **Ana-Maria Gutierrez** on Sep 01, 2006
We are happy to welcome Margaret Bausch and Melinda Ault, researchers with The National Assistive Technology Institute, as they lead a discussion on integrating research to practice.

Throughout the month, we will discuss findings and implications of The National Assistive Technology Institute's six-year research project which examined factors related to the planning, development, implementation, and evaluation of AT services in schools across the nation.

We are eager to hear from you. What problems do you encounter when searching for and/or implementing research into your practice methods? What kind of research would be of value to your practice? What can be done to improve the availability of research?

We hope you'll share your experiences and questions with our experts and participants. Welcome to the discussion.

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- **Welcome from the Discussion Leaders** by **Margaret & Melinda** on Sep 01, 2006
Hello and welcome to the Family Center's Online Discussion on "Integrating AT Research into Practice." As assistive technology (AT) researchers, we are continually faced with the challenge of disseminating our research findings in ways that are useful to people who provide AT services, as well as for AT users and their families. It is our hope through this discussion to (a) address the barriers of conducting AT research in general; (b) address the barriers associated with integrating research to practice; (c) discover the ways that people who are consumers of the research, find to be the most useful when learning about research findings; and (d) identify the best strategies for disseminating research information that have already proven to be effective or are not yet being utilized.

Having said this, let us provide you with a few questions to help lead our discussions. Feel free to bring up other topics that are of interest to you.

For Researchers

1. What are the barriers of conducting AT research?
2. What methodologies are being used for AT research?
3. What are the ramifications of the current federal initiative identifying randomized clinical trials as the "gold standard" for identifying effective practices?
4. What are the issues researchers must address when addressing current legislation on evidence-based practices?
5. What are the ways you have found to be most useful for disseminating your research

findings to people who need them?

For Families and AT Users

1. How do you stay current on AT issues?
2. Do you receive information on practices that have been proven effective based on research findings? If so, how does the information come to you?
3. How do you judge if an AT practice is effective?
4. What are the ways that you would find to be most useful in getting information on current research findings? For example, going to trainings, attending conferences, reading an article, etc.)

For AT Service Providers

1. What are the barriers for integrating research to practice?
2. How do you receive information on current evidence-based practices?
3. What are the ways that you would find to be most useful in accessing information on current research findings? For example, going to trainings, attending conferences, reading an article, etc.)
4. How do you deliver information to families and AT users about current research-based findings?

For Administrators

1. What are the barriers for integrating research to practice from an administrator's point of view?
2. What are the ways that you would find to be most useful in getting research findings into the hands of the people who need them the most?
3. Is there an existing organization or dissemination method that you regularly use to gain information on current research findings?

Again, welcome to the discussion,

Margaret & Melinda

- o **Re:Welcome from the Discussion Leaders** by **Richard Kiefer-O'Donnell** on Sep 01, 2006
I think that this is a great opportunity. Thanks for hosting/moderating the different discussions. I think that all of the topics are very important.

Later, as the ball gets rolling, I would like also to hear about your experience with preparing new teachers to integrate AT into practice. It's somewhat of a special issue associated with integrating AT, and may best be mentioned after the various other important items. I would still like to hear your thoughts on it, especially when local resources are "thin" or don't give great opportunities to see AT applied, be it effectively or across the curriculum.

Richard

- **Re:Welcome from the Discussion Leaders** by **Jackie Hess [SI Faculty]** on Sep 01, 2006
Let me add a slightly belated welcome to everyone and encourage you to ask questions about and/or comment upon whatever aspect of this issue that intrigues you.

I share Richard's interest in pre-service training (if I'm interpreting "preparing

new teachers" correctly). In a number of other FCTD online discussions participants have commented on the need to greatly strengthen pre-service curricula to include much more information about and hands-on experience with assistive technology (and education technology generally). This seems to me to be the right place to introduce teachers to research. They've got more time to do the reading; there are professors to help them navigate unfamiliar vocabulary; and they have reliable, broadband access to Internet-based resources.

Margaret and Melinda, do you have the sense that research results are being disseminated in ways that are targeted to pre-service teacher training programs? Thanks.

- **Re:Welcome from the Discussion Leaders by Marcia Scherer** on Sep 01, 2006
Margaret, Melinda and Richard,

Yes, getting AT into the classroom is a challenge, as Richard pointed out. It's still the case that students with disabilities who could benefit from AT aren't getting it or using it to their full benefit. Why? I think of a 3-legged stool consisting of (1) informed teachers (pre-service and in-service training for teachers on AT), (2) IEP knowledge of and commitment to AT, and (3) administrative support for AT. Remove any one leg and the stool is unstable and can't support a person.

I'm looking forward to participating in this discussion and seeing what ideas the variety of participants bring.

- **Re:Welcome from the Discussion Leaders by Melinda Ault** on Sep 01, 2006
Marcia, Richard, and Jackie,

A couple of things from your previous posts.

First, I totally agree that there is not enough preservice instruction on AT that occurs and that service providers are coming out of their programs feeling unprepared to make effective AT decisions. In fact, as you know, since AT is such an incredibly fast-changing field, the need for ongoing training is imperative. In one of the studies conducted by the National Assistive Technology Research Institute (NATRI) here at the University of KY, we interviewed over 200 teachers from 10 states across the country. The number one thing they told us that would improve services in their district, was the need for additional training. And what was surprising to us was the kind of training they indicated they needed the most was general awareness training, indicating that they did not even have general awareness information.

Second, in terms getting research integrated into classrooms, I agree with Jackie that preservice education is the ideal time to begin that process. Students in university courses are much more likely to read research on a regular basis. If you ask teachers practicing in the field, they just don't have the time to be regular consumers of research journals. What I do think is extremely vital however is while direct service providers are in their preservice educational courses, that they are taught how to be discriminating consumers of research. In other words, they must learn how to read research, interpret the results,

and evaluate the research methodology. If they have these skills, then once they are in the field, they will be better able to judge the value and appropriateness of practices (that may or may not be research based) that they use in the field.

- **Re:Welcome from the Discussion Leaders by Marcia Scherer** on Sep 01, 2006

That is so spot on, Melinda, and where the FCTD site can play such a key role. The task then becomes getting the word out about the site.

Naturally, you can count on me to always bring up the need to involve the student and family in the AT selection process. They, too, often feel out of the loop and uninformed. I know that is a priority for the FCTD site. But are there additional things that can be included on the site? Hmmmm.

- **Re:Welcome from the Discussion Leaders by Jackie Hess [SI Faculty]** on Sep 02, 2006

Great point, Melinda, with respect to the need for people to learn how to read, interpret and evaluate research. While it's been very exciting, in the past 20 years, to get increasingly widespread access to primary source materials, we haven't accompanied that access with instruction in the skills needed to accurately understand and interpret those materials. I've long felt that we need to start in elementary school, teaching children how to identify: source, source bias, message intent, etc. We need to teach inductive and deductive logic and how to conduct appropriate Boolean searches. If we do that in K-12 environments, families, educators and practitioners will be better prepared to approach research in whatever their post-secondary environments are.

- **Re:Welcome from the Discussion Leaders by Joy Z** on Sep 02, 2006

Bravo for bringing this topic up right away, Richard... I agree with all that has been said...that practitioners sometimes have little current experience reading, interpreting, and evaluating research in a way that enables them to use the research to guide their practices. While I believe that some of this is related to training - or lack thereof - I feel strongly that some is also related to opportunity and to the ways in which research is communicated. Unfortunately, scholarly work tends to be written up in a way that is most meaningful to other researchers and published in works that are most available to other researchers rather than communicated in ways that are most useful to practitioners in works that are more typically available to them. Certainly there are reasons for this, but, in this day of "research-based practices" it is CRITICAL that practitioners have access to research and that they know how to interpret and use the research to guide their practices.

So, that brings us back to the question of how to prepare teachers at the pre-service and in-service levels to be effective consumers of research. As some of you may know, the Technology and Media Division (TAM) of the Council for Exceptional Children (CEC) is a collaborator in the annual conference of the Assistive Technology Industry Association (ATIA) held in Orlando, FL, each January. This year Dr. Tara Jeffs is the strand chairperson for the Research and Professional Development strand for which TAM is responsible. Dr. Jeffs and several others will also be conducting a preconference about this very topic - preparing teachers and other school personnel to be effective consumers of research - how it is done, what it says and what it doesn't, applying research to outcomes, etc. Just thought I would mention this, as it should be an excellent session that, while not a "solution" is certainly something useful on the menu of options.

- **Re:Welcome from the Discussion Leaders by Sue Zapf on Sep 02, 2006**

Hello everyone. My input is based on my experience as an OT and ATP in the school setting; what I find most difficult is that yes, Richard, teachers are not prepared with basic technology and technology options for students with disabilities coming out of school (I have heard that courses on AT/IT are starting to be offered). The other area I find in special education is that because there is such a shortage of Special Ed teachers that many are getting alternative (fast track) certifications and that also adds to the lack of training in this area as well as special education in general.

Time is the biggest factor I think in getting teachers to buy into utilizing the AT, it takes time to learn something new and when they have so many demands on them such as preparing students for state testing, paper work, AT training often falls to the side which is a catch 22 because if they incorporate the AT into the student's education it will lead to more success for that student on their IEP, success in state testing etc. Administration needs to also support AT in the district, if they are not willing to purchase equipment and train staff then it will not be effective in that district.

In regards to the question on evidenced based practice, that is the big buzz word with IDEA and the new regs that we need evidence based practice to justify what we are doing - medical and education are finally emerging in the same territory! However what I find in the school setting is lack of understanding how to do research, who is responsible for that research and once again time factors. If a parent disagrees with an approach and/ or requests a technique, is that service provider responsible for justifying their approach in regards to research? From a research perspective colleges will need to start preparing students at a Bachelors level instead of Masters level, as well as research will need to be embedded into the educational system. This will be an interesting discussion-look forward to meeting with you in Sept. Sue

- **Re:Welcome from the Discussion Leaders by Joy Z** on Sep 02, 2006

Not only is there limited understanding of how to do research in schools, there is also a very narrow interpretation of what "counts" in the research arena in schools these days. There are some interesting challenges to applying group designs and control groups to special education populations in educational settings for a variety of reasons, but one that, as a teacher, I find most compelling is that there are so many, many variables that are beyond control in a typical classroom and within a population. What are others thinking about this?

- **Re: Welcome from the Discussion Leaders by Icb** on Sep 04, 2006

I am jumping into this very important conversation to say three things. 1) I totally agree that it is one thing to say that research needs to be used in the classroom, but it is a very different thing for a current teacher to a) learn about the current research, b) filter the information to determine its relevance, and c) integrate it into the curriculum. Yes, it must be addressed in preservice, but the systems have to exist in order to continue to retrieve the current research that is concise and in laypersons' terms. 2) In addition, as Joy mentioned, there are so many variables involved in any one classroom that the design of the study is extremely difficult to replicate. It is important to understand that many research studies that relate to classroom instruction and pedagogy are grounded in very specific parameters that are sometimes impossible to recreate. For example, leadership is a critical component. 3) Finally, as an educational technologist I would like to know what the research has found regarding the impact of communication among district stakeholders on the successful integration of AT in the classroom. I found that ongoing communication among the educational technologists, assistive technologists, informational technologists and any other person directly responsible for getting technology into the classroom is critical.

- **Re:Welcome from the Discussion Leaders by Jim Tobias** on Sep 04, 2006

I agree; aren't we asking too much of teachers to expect them to do all these research-oriented functions? They are not expected -- or even permitted! -- to make changes in the curriculum based on research, so why AT?

The LEA culture is pretty disconnected from research as it is. (There's plenty of research proving that!) So it'd take an exceptional teacher to find the time and go against the grain.

My conclusion is that communication about the research needs to be made more accessible, and other professionals need to explore the research in order to make it suit the classroom environment. There needs to be a team approach in which the teacher is the implementer, not the initiator.

- **Re:Welcome from the Discussion Leaders** by **Marianna B** on Sep 04, 2006
I would definitely agree. This is where I feel that administrators need to step up to the plate with more support for their teachers through in-service trainings. In my state, in service training is often used to let teachers grade papers for two hours and then they go home...there is no training involved!

Administrators need to take advantage of these days that have been set aside for their entire staff and provide them with at least a modicum of AT and IT training as well as research and evidence based practices.

- **Re:Welcome from the Discussion Leaders** by **guest** on Sep 05, 2006
Right on!
- **Re:Welcome from the Discussion Leaders** by **guest** on Sep 05, 2006
As an assistive technology specialist, I wholeheartedly agree with your point c) that there needs to be a more effective system for educators and other AT specialists to access current research. I have had to dig to find current research on AT and most of it is in journals that my school can't afford to subscribe to and neither can I. What can be done to improve access to the research that already exists for practitioners in the field? I'd like to hear others' ideas...
- **Strategies for Accessing Research** by **Melinda Ault** on Sep 05, 2006
Thank you for all of your comments regarding teachers accessing relevant research and transferring it to their own environments. And as others have pointed out, as difficult as this is for teachers to do, it is even more so for families who are trying to sift through much of this information.

One person mentioned that a role of the administrators is to make the research available to the teachers.

Please post some strategies that you have found to be helpful (if there are some) in accessing research either as a parent, direct service personnel, or administrator. Where do you access information the easiest? Through journals, professional development trainings, preservice education, one-on-one trainings, listservs, manuals, etc. And if none of these have worked for you, what methods do you think would prove useful to you. How can we use what is already in place to our full advantage to "get the word out there?"

- **Re:Strategies for Accessing Research** by **guest** on Sep 07, 2006

Most professional development trainings I have attended regarding assistive technology do not offer much in the way of formal research to back up strategies, best practices, efficacy of tools, etc. I think the reason is that there is not enough research being done specifically addressing assistive technology implementation.

There are a few journals that offer research findings regarding special education technology, etc. but I don't think these journals are readily available to practitioners, at least I don't think they are easy to access.

I think one solution to getting the word out there is for organizations that promote assistive technology (I won't name any names) to make research dissemination a higher priority because teachers and service providers can't do it alone.

- **Re:Strategies for Accessing Research** by **Melinda Ault** on Sep 08, 2006

I am sure that many PD

trainings that you have attended do not offer formal research findings, probably because the field of AT has not been so great to this point about establishing a body of research. This has most probably occurred because of the global nature of the term "AT", as well as the heterogeneous nature of the population served. AT is such a catch all phrase that I believe it has been difficult for researchers to narrow it down in such a way to be able to create a line of research.

I wholeheartedly agree with you that there is not enough research being done on AT implementation and we at NATRI found in our research that effective implementation of AT for individual students (i.e., use of evidence-based instructional strategies, data collection on AT effectiveness, follow-up, follow-along) is not occurring often in schools.

I do think that journals are one means of dissemination, and I could be wrong, but I don't think that they are necessarily the answer for teachers. I'm not sure teachers access research journals that often, once they are practicing in the field. You offer one solution of professional organizations taking more of a role in research dissemination. Are there other strategies that people can suggest that you think would be effective? Should administrators play a much more active role in finding the research and then communicating it to the teachers and service

providers. You are correct. As you say, they cannot do it alone! What role would clearinghouses play? What about technical assistance centers? Any thoughts?

- o **Re:Strategies for Accessing Research** by **guest** on Sep 11, 2006
I am finding that online list-servs are one of the best ways to find out about researches - I am on the QIAT list-serv that was suggested in another strand in this discussion and sometimes researchers will participate and can be a wonderful resource.

I'm curious to know why you suggest that administrators play a more active role in research dissemination. What kinds of administrators do you have in mind, and would they assume that role? Also, since they may not have much knowledge of assistive technology, how would they compile the research? Or would administrators simply be a conduit for passing research data along to practitioners in the field?

I like the idea of an online clearinghouse for research on

assistive technology. Wouldn't that be great? Is there one out there already? If so, I'd love to know about it. Thanks

- **Re:Strategies for Accessing Research by Melinda Ault**
on Sep 18, 2006

I am glad that you are finding listservs valuable. Margaret and I, at every opportunity we get, tell people about the QIAT listserv and what a wonderful resource it is. Surprisingly though, in most of the 43 school districts in 10 states that Margaret and I visited for NATRI, people were not aware of this listserv. I'm not quite sure why that is. We continue to try to get the word out!

In terms of administrators, I am thinking about administrators at the state,

district, and school levels. I see them as you say, as a "conduit for passing research data along to practitioners." Once a person is employed, the administrators are really the ones who control the professional development opportunities in the districts. Also the principal is the instructional leader of the school. It seems to me that in these roles, the administrators should be the ones who are actively gathering information on research and then providing information and professional development on evidence-based practices, giving teachers what they need to implement them correctly, and then following up on their

implementation. They should be very selective about the professional development opportunities they choose to provide or options they give for PD with their staff. One example from our NATRI research is that special education teachers told us that when they receive training on assistive technology, other important team members (such as the general education teacher and paraprofessionals) are not required to attend the same training. Thus, the team of people serving the student do not have common sources of information. An administrator's role could be to coordinate these trainings so that all team

members are receiving research-based and common information. Does this make sense? Do others see these responsibilities as the role of administrators?

Now about an online clearinghouse. I do not know about a clearinghouse for research specifically on assistive technology. Does anyone else? The one that I do know about however is the Department of Education's clearinghouse at <http://www.watworks.ed.gov/> Has anyone used this clearinghouse with success in terms of locating valuable research information? Are there other clearinghouses that you have used?
Melinda

- **Re:Strategies for Accessing Research** by guest on Sep 18, 2006
First, thank you for the website resource - I'm always looking for new resources.

I see your points about administrators taking the lead in coordinating professional development opportunities.

Although, I do wonder if administrators, like those of us

in the field, would run into difficulty finding training opportunities that include sufficient research-based AT information.

- **Re:Strategies for Accessing Research by Pat** on Sep 07, 2006
I'm the parent of a child on the autism spectrum (Asperger's), and a professional in the disabilities field. Over the years I've looked for and read dozens, if not hundreds of "studies," some of which met the criteria cited earlier for scientifically-based research, much of which did not.

When I first started researching "pervasive developmental delay" in the early 1990s, (via the Internet of course) I found that the most useful research came from England and was written for disabilities diagnosticians and other professionals, including researchers. I liked that it hadn't been "dumbed down" for parents. I was amazed that the professionals dealing with my son, and making significant decisions about him, seemed completely unfamiliar with the state of research. So I put together a 3-inch packet of research articles and distributed

them to all those who wanted them. After a few months, I was getting calls from Child Find professionals in 3 counties, school system professionals and others, asking for the packet. When I learned that the articles were overwhelming to some, I put together a 2-page sheet with the highlights, with pointers toward the relevant articles for those who wanted to read more. I distributed that packet for 3-4 years.

I guess one of the points I want to make is that I'm sympathetic to programs that have to produce and interpret research results for teachers, parents, and others who don't use "research speak" on a daily basis. It's hard to know how much information to provide and what vocabulary to use. It's also hard not to be prescriptive when most teachers and parents are looking to the research for prescriptions. Yet most research stops short of making implementable recommendations. We have a LONG way to go and I'm not sure we would all agree on what the goal is.

- **Re:Strategies for Accessing Research** by **Melinda Ault** on Sep 08, 2006
Wow, what amazing ingenuity you have to have done this work for your son and his district, but also a little disheartening that individuals making decisions about your son did not have the information. I think though that this is exactly the kinds of information that direct service people need. A nice, easy-to-read synthesis of evidence-based practices for children that they serve that does not overstate the effectiveness of the research. The question would be how to get these kinds of "research

highlights" into the hands of people who need them?

Researchers are not necessarily the greatest at being able to synthesize their information and I think they are hampered many times because people want an easy solution or an easy interpretation of the results. They want to know this procedure works for this student in this way. Unfortunately research results are not always so straightforward and it can take years (time schools don't have) for researchers to establish a line of research that can lead to definite recommendations about effective strategies.

The more I think about this, the more I see administrators playing a huge role in getting the research information to the direct service professionals. Am I off base here?

- o **Re:Strategies for Accessing Research by Dr. Shaheen** on Sep 13, 2006
In the light of my personal administrative, research and teaching experience and dealing with special needs children since 1992, every thing which is said on this forum is true. Due to this experience, I observed that sometimes teachers and other staff members did not realize the

effectiveness of assistive technology, which is mainly due to the lack of their training and awareness. For example, in a school teachers were using computers as an incentive rather than a source of teaching technology. Like "Rosie, complete this task, then you will have your go on the computer."

Secondly I would say that the situations in special schools are rather more challenging than in mainstream schools, particularly when dealing with Autistic children. According to my experience, each child is different from the other. Interpreting and implementing research findings in special schools themselves is a very good field of research. For example, in one school, teachers were implementing TECCH but the way they were implementing it clearly showed that they did not have a clear understanding of the correct technique. For example, the teaching staff working with a child was continuously negating towards the child and was forcing the child to continue with the same activity as directed

by the class teacher.

I do agree there is not enough research about AT. Also professionals do not have enough knowledge about it. The field is very dynamic and developments are occurring at a very high pace. Keeping up to date with these developments needs both time and energy. But unfortunately, teachers do not have either. For this, teachers are not to be blamed.

Considering the work load, burden of the responsibilities, paperwork and addition to that, the low staff to student ratio, teachers are often worn out. In some schools TA and volunteers are often called in to work as additional support. What else can you expect in such a situation? Assistive technology needs special skills which have to be learnt with effort. Teachers need special incentive and training to allow them to progress towards it positively.

Simply I would say, the head teacher can play the most important role in implementing research findings. And believe me, it

works. If we believe special schools are for education then the head teacher needs to demonstrate and help teachers, providing them with the latest findings and making the literature available to them. Lastly if we want to promote AT then we need to convince teachers and other members of staff to use it, but for that we need to reduce their work load and provide them with enough time to explore newly emerging technologies and find out which is suitable for their students and classroom.

- **Re:Welcome from the Discussion Leaders** by **Melinda Ault** on Sep 05, 2006

Yes Joy I understand what you are saying. I think it is unfortunate that the information that is coming from the federal legislation seems to prefer randomized control trials and group designs. Given the special education population is so heterogeneous, it is important that people understand that there are other research designs that can show effectiveness. Single-subject designs seem to be designs that are ideal for classroom teachers as they use the student as their own control, so teachers can discover the strategies that work best for the individual students they have in the classroom at the time.

- **Definitions** by **Fran T** on Sep 01, 2006

Before we get too much further I wonder if you could clarify some terms. How are the terms "research based practice", "evidence based practice" and "effective practice" related? What are the standards for each? They sometimes seem to be used interchangeably and I wonder if that's right.

- **Re:Definitions** by **Joy Z** on Sep 02, 2006
EXCELLENT question!

- **Re:Definitions** by **Becca** on Sep 05, 2006
Where is the answer to this question?
- **Re:Definitions** by **Margaret Bausch** on Sep 06, 2006
Thanks for the great questions about definitions. I'm not sure there are "accepted" definitions for the terms that Fran mentions and I agree that they frequently seem to be used interchangeably. Although I view the terms differently, I don't want to split hairs.

My colleagues and I use the term "research based practice" to refer to an intervention (or practice) that has its foundation (in other words, is based) on research. There might not be evidence that the specific intervention works even though it is based on research. As a crude example, let's say that research has shown that students are able to identify errors in their writing when their compositions are read aloud to them. A software company may promote a text-to-speech program based on that research or a teacher may use the text-to-speech program for that purpose. Even though the program is "research based" or the teacher's intervention is "research based", there may not be evidence that using the text-to-speech program helps students identify their errors or improves their writing.

One the other hand, "evidence based practice" can be viewed as an intervention (or practice) that has been proven (or there is evidence) that it is effective. In the example above, there would need to be data (evidence) to show that the students are able to identify their errors using the text-to-speech software. Now having said this, of course, there is nothing to say that just because students can identify errors, that their writing will improve. There needs to be more "evidence"!!

Any comments?

- **Re:Definitions** by **Joy Z** on Sep 06, 2006
Very well put, Margaret. Everyone needs to know this distinction.
- **Re:Definitions** by **guest** on Sep 06, 2006
Yes, thank you for the clarification - I didn't understand the difference until now.
- **Re:Definitions** by **Franklin G.** on Sep 06, 2006
I appreciate your effort to clarify and I'm glad it seems to have helped others. Maybe I'm just dense, but I still don't see why the example you used to define "evidence based" couldn't just as easily be considered research based. After all, wasn't the "evidence" research? It occurs to me that evidence may be a looser standard, in that the intervention may not have involved a control group or other experimental factors. On the other hand, a lot of research in this field doesn't have those controls either (at least based on what I read in journals). Since so much of the emphasis on research based practice is coming out of the Department of Education, have they defined what they mean? Have they come up with a glossary of terms that sound alike but that mean different things to them? Even if they have, will that have much impact on real teachers or only on university-based researchers bidding on federally-funded programs?
This is an interesting discussion.

- **Re:Definitions by Margaret Bausch** on Sep 06, 2006
Franklin – I don't think you are at all dense – it is a fine line and one that we may be trying to define too literally. The only definition that I know stipulated in the law is the one we put in our introductory comments for "scientifically based research". I have repeated it here for the sake of continuity to this thread.

The term scientifically based research comes from section 9101(37) of the Elementary and Secondary Education Act (ESEA) of 1965 (as cited in the IDEA Federal Register, 2006), and

Means research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs; and includes research that—

1. Employs systematic, empirical methods that draw on observation or experiment;
2. Involves rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
3. Relies on measurements or observational methods that provide reliable and valid data across evaluators and observers, across multiple measurements and observations, and across studies by the same or different investigators;
4. Is evaluated using experimental or quasi-experimental designs in which individuals, entities, programs, or activities are assigned to different conditions and with appropriate controls to evaluate the effects of the condition of interest, with a preference for random-assignment experiments, or other designs to the extent that those designs contain within-condition or across-condition controls;
5. Ensures that experimental studies are presented in sufficient detail and clarity to allow for replication or, at a minimum, offer the opportunity to build systematically on their findings; and
6. Has been accepted by a peer reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review. [ESEA, Section 9101(37)]

Does anyone know of other terms that have been defined by law?

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- **More definitions by Jim Tobias** on Sep 04, 2006
"AT" is a catchall term, and it's not very useful in most practical contexts. There are important differences in the nature of research about seating inserts compared to computer accommodations, for example. And the classroom implications are different as well, especially regarding how involved the teacher must be to make the AT succeed for the student.

- **Re:More definitions by Margaret Bausch** on Sep 06, 2006
Jim, I agree. AT does seem to be a catchall term. In fact, we have a saying at the National Assistive Technology Research Institute (NATRI) that we have jokingly threatened to paint on the wall of our meeting room, "If it is, it is AT!" The fact that AT is such a catchall phrase makes it extremely difficult to conduct research or gather a body of research on one AT topic. The enormity of the subject has led to the dearth of AT research.

Since so much research needs to be done, where do we begin? What are the research questions that teachers, parents, administrators would like to have answered? How can researchers help the practitioners?

- **Re:More definitions by Jim Tobias** on Sep 11, 2006
I'm glad you agree -- we need to refine the definition of AT. I am most concerned by the sloppy use of it you mention! See the many such definitions in circulation, even authoritative ones:
http://www.google.com/search?hl=en&lr=&rls=GGGL,GGGL:2006-10,GGGL:en&defl=en&q=define:Assistive+Technology&sa=X&oi=glossary_definition&ct=title

According to some definitions, once a person with a disability uses it, it's AT, even if it's a mainstream product. This is one distinction we should not omit. Because of the differences in intent, funding, legal and regulatory status, clinical participation, market size, etc., I think it's essential to keep the term "AT" applied to specialty devices. (I myself am more interested in making mainstream products more accessible than in developing AT, but I do recognize AT's essential role.)

Another thought is to refine the analysis down to the features that exist within a product. A given product could have 3 kinds of features:

inaccessible: features that inhibit easy use by people with disabilities

accessible: features that permit easy use by people with disabilities

accessibility: features that expand the whole user interface to permit easy use by people with disabilities, or permit easy use of another, connected product by people with disabilities

AT products are usually made of the last category, but some mainstream products have accessibility features as well (e.g. StickyKeys in operating systems).

- **Re:More definitions by Margaret Bausch** on Sep 12, 2006
Jim, I think you have given us something to think about. I know several individuals and groups of folks have talked about redefining AT for quite some time. Although a new definition would have to be legally "approved", more guidance would, I think, help the field. Case in point, in conducting our research across 10 states, Melinda and I visited 43 districts. Although we don't have an exact number (even researchers don't remember to collect data all the time), we were asked in almost every district, "How are you defining AT?" In fact, we

found it necessary to provide a generic list of AT devices (e.g. alternate keyboard) on one of our data collections tools because after conducting a pilot study in 6 districts we found that special education teachers were not able to list correctly the AT devices their students were using. The overwhelming tendency was to over identify AT (e.g. a calculator that all the students in the class were using as a tool).

I would like to ask others including teachers, administrators, parents, and researchers if you would like to see AT redefined and if so, what changes would you like to see and how would the changes assist you in your role.

- **Re:More definitions by Dr. M. A. Pasha** on Sep 13, 2006

I do agree with your comments, the definition of Assistive Technology is an important aspect and needs serious consideration. I have posted a discussion paper regarding the redefinition of assistive technology at <http://www.cartuk.org/?q=node/33> (Please feel free to post your thoughts, your comments are very welcome.)

Actually the new definition of disability given in the International Classification of Functioning, Disability and Health (ICF) has changed the whole concept of 'disability'. 199 countries signed and agreed to implement ICF in their countries to handle health and health related tasks. ICF has defined disability as the dis-functioning of Body structure and human Functioning (Impairment), Activity limitation and Participation restrictions taking into account environmental and personal factors. We have already launched a global ICF awareness campaign and posted some useful information (to access this please visit www.cartuk.org for more information)

The new definition has mainstreamed disability and considers it could happen to any person at any stage of his/her life. This definition is an ultimate source of curbing discrimination against disabled people. The point here is that if 199 countries are to accept this, then we need to redefine the definition of assistive technology in the light of this new vision.

A detailed discussion is given in my discussion paper. Why I argue to stop using the old definition? The existing definition itself is a source of discrimination against disabled people. I personally believe to discuss this aspect of the AT definition on the forum is necessary.

At CART-UK we consider Assistive Technology as an umbrella term, defined as:

"Assistive technology consists of a procedure(s), process (es), equipment(s), material, activity(ies) or system(s) that allows an individual or a group of people to perform a task they would otherwise be unable to perform or increases the ease and safety with which the task can be performed."

This definition is more generic and does not make any sort of

discrimination against people with or without a disability. It also broadens the scope of Assistive technology. We strongly believe, this definition encompasses all aspects of the WHO-ICF disability definition and unite all people with or without disabilities to work together and strive forward.

- **AT for Math for the student with limited hand function** by **Link** on Sep 04, 2006
I am seeking Math AT (software/hardware) for a CP student that will provide for legibility in regular 6th grade Math? Is there AT for scanning math textbook and workbook pages into a laptop where a student could then do calculations on the laptop, and/or create his own Math problems. The student needs AT for Math for legibility, and easy changes to calculations. He is left handed, but with weak strength and fine motor in left hand. Cannot use his right hand. He has a laptop for literacy, but SD had not provided AT for Math that has been requested for 2 years. Please can someone help me with this? Is there any Math AT for a middle school student without a learning disability, and that will take him on into Jr. High and High School?
 - **Re:AT for Math for the student with limited hand function** by **Jim Tobias** on Sep 04, 2006
I'm not sure exactly what he needs, but there may be no AT involved here. Do his answers need to be on the same piece of paper as the problem? If that's required, I would ask why -- it certainly is not an educational objective. He should be allowed to put the answers on another piece of paper, as long as he gets the numbering right. Then you can scan or even photocopy the workbook pages. (By the way, these pages should be available in electronic media already, for blind students. Your teacher may not know about this, but the publisher may.)

Can he use the laptop keyboard, with or without AT? If so, much of the legibility issues should be solved that way. He should be able to type in his answers, right? If you need math symbols, most of them are available in word processing software (In MS Word, it's in Insert...Symbol...). More advanced math symbols and layout are available in some other mainstream software packages, but this should get him through HS.

- **Re:AT for Math for the student with limited hand function** by **Link** on Sep 04, 2006
Thank you for your reply. No, I don't believe answers would necessarily need to be on the same page. Yes, he can one finger type using his left hand/finger and is familiar with the standard keyboard on the laptop. I am seeking a way to possibly scan math worksheets, or problems from a textbook into a laptop or other device and enlarge them to allow more room for the computation of the math problem and keeping columns of numbers straight. All the while using the laptop for computations. We are seeking to use the device whatever one it is instead of his hand print. The area of need is with long calculations, division for example, where one has to place numbers underneath and keep the numbers straight and lined up. The student has problems with fine motor in that his print is all over the place, varied in size, and light in print making it extremely hard to legibly compute math problems. We have had an aide transcribe or even write numbers he tells her where to put. But, our goal is to increase his independence so he doesn't have someone with him constantly, even if it is just one class. He is mainstreamed and gets A's and B's so we

know he can do the work. The School District has not been any help (for whatever reason) and surely there must be some kind of software out there to do this kind of thing. Do you know of any software or hardware that could help in this area.

- **Re:AT for Math for the student with limited hand function** by **Jim Tobias** on Sep 05, 2006

If you scan the page into the laptop, the image of the page will take over the whole screen; he will not be able to type on top of it anywhere without some additional re-formatting. Depending on the software you use, you could re-format the picture so that it becomes merely a background (like stationery), or you could re-format it to allow for typing on top of the image. Personally, I would advise you to photocopy the pages instead, and use a separate sheet for his calculations and answers.

To do the calculations showing all work and keeping everything neat, how about a word processing table, with one character per cell? (I would suggest a spreadsheet instead, but then he could cheat!)

If you make a table 20 characters wide and 20 characters high, you could easily fit in a long division problem. If this is not immediately clear to you, email tobias@inclusive.com with your email address and I'll send you an example.

- **Re:AT for Math for the student with limited hand function** by **ello** on Sep 04, 2006

I just read about virtual pencil. If you google it, there is a home page. don't know if it is what you need, hope it helps.

- **Re:AT for Math for the student with limited hand function** by **link** on Sep 04, 2006

Great! I will take a google and see!

- **Re:AT for Math for the student with limited hand function** by **Sue Zapf** on Sep 05, 2006

Math software that I have used is math pad by intellitools which has various math calculations addition, multiplication, fractions etc. The program helps with lining up work doing work on the computer-etc. the downfall is that the questions are already programmed in so they may not be the questions the class is using or you can type in question which is time consuming, I'm not sure if scanning the questions in would work but you could ask the company. I have used it with a child that has MD and very weak fine motor strength and tired easily so pencil paper was not an option. Also if you want to go with having him write it out you can get ruled line graph paper which may help with staying in the line giving both a visual and tactile cue. Hope this helps. Sue

- **Re:AT for Math for the student with limited hand function** by **link** on Sep 06, 2006

Thank you Sue. We have been using large grid paper. It's still not very legible. And of course we still have the initial problem of what to do with the workbook page and math. I'm looking for something that will allow for scanning the material (Math text book problems, workbook pages, or teacher made test materials) onto computer as well as allowing the student to complete those workbook pages on the laptop (or other device?). Student

does same work as all regular ed kids, but is having difficult time with all the computations and keeping them lined up/in order. And with Math getting more and more complex we need something other than a pencil and paper. Sounds like the Intellitools math pad is great, but I guess it wouldn't work for this student's need. Thanks.

Link

- **Re:AT for Math for the student with limited hand function** by **guest** on Sep 07, 2006
You can input your own problems in MathPad Plus: Fractions and Decimals (an Intellitools product). It provides a worksheet for legible calculations. It sounds like that might be a good solution for this student.

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- **Frequency of AT evaluations** by **The Advocacy Institute** on Sep 05, 2006
Hi Margaret and Melinda:

How often should students be given a formal AT evaluation?

Candace Cortiella
The Advocacy Institute
www.AdvocacyInstitute.org

- **Re:Frequency of AT evaluations** by **sj** on Sep 05, 2006
what is "formal"?
 - **Re:Frequency of AT evaluations** by **Sue Zapf** on Sep 05, 2006
The law does not give a specific frequency on AT evals but identifies that an AT eval is needed to help identify a student's AT needs. The law does state that AT must be considered at the student's ARD and determined that if AT is needed or not with an explanation. The ARD committee can identify AT for that student without an evaluation. In many districts in the Houston area the use of AT does not always mean that a formal AT eval is needed, if the IEP team can identify what the student needs and try the AT there does not need to be a formal eval, often times AT will be addressed by other service providers in their reports such as speech and OT. A formal AT eval is requested in our district when the team is not able to determine if AT is needed to help the student meet their IEP goals during the AT consideration part of the ARD or if there is a specific request for AT and needs a team of AT evaluators to come in and help determine the AT. We will also request an AT eval for expensive equipment for justification. Training the school personnel on AT helps in making the appropriate determination in the consideration process. However I still find at times the ARD committee not using the consideration process appropriately by looking at the student's progress, I still hear in ARDS they don't need a speech device no need for AT - that is not effectively considering the need for AT. Look at the Texas 4 step model for AT considerations/ on Region 4 or the TATN. Hope this helps. Sue
 - **Re:Frequency of AT evaluations** by **Melinda Ault** on Sep 06, 2006
Thank you Sue. I think this helps very much. I agree that the law does not specify a time when formal AT evaluations must occur. The IEP team will call for a formal evaluation if one is necessary to determine the best fit of technology for a student's needs, and/or if they decide

that the IEP team does not have adequate expertise in an area of AT to make a decision.

In terms of the consideration process, our NATRI data from teacher interviews across 10 states in the country indicate that most teachers we interviewed did not have access to guidelines specific to AT for writing IEPs or conducting IEP meetings. Also in terms of documenting consideration, although a narrative explanation about the consideration process is needed, our data indicated that 46% of the teachers we interviewed, do not consistently use a narrative explanation of consideration.

- **Re:Frequency of AT evaluations** by **Angie** on Sep 06, 2006
Given that 46% of the teachers you interviewed don't consistently use a narrative explanation of AT consideration, how likely do you think it is that teachers (and others) will insert AT research findings into IEP's? Is that the goal? If not, how would the supporters of research-based practices like for the research results to be made visible? Don't mean to sound oppositional, just a reality check. Or at least trying to figure out what the goal is.

Angie Ardell

- **Re:Frequency of AT evaluations** by **Joy Z** on Sep 06, 2006
Just as an FYI for people interested, there is a training module on consideration that defines the Texas 4-Step Model available at <http://www.texasat.net>. The module contains pretty much everything that is needed to conduct a training session on how to consider AT during the development of the IEP as required by IDEA. If anyone wants to learn about the process but does not need/want to conduct a training session, I believe you would find that the speaker notes make a decent read.

-
- **Experiment in information dissemination** by **Jackie** on Sep 08, 2006
Margaret and Melinda, there's been some discussion of the difficulty in accessing, understanding, and implementing research results. Why don't we try an experiment? Describe for us, if you will, one of NATRI's AT research findings and perhaps we can discuss the challenges involved in moving that finding into classroom or other site-based practice. Thanks.

- **Re:Experiment in information dissemination** by **Margaret Bausch** on Sep 13, 2006
Jackie - a great suggestion.

One of the most noteworthy findings of NATRI is that professionals providing AT services are not consistently planning for AT implementation with their students resulting in ineffective, incomplete, and discontinued use of AT. Perhaps the finding is not surprising, however, one that may present challenges to teachers, parents, administrators, and AT service providers.

Let me provide some background information for the finding that we are using in our experiment. The primary data collection tool used was a teacher interview form that NATRI developed based, in part, on the Quality Indicators for Assistive Technology Services from The QIAT Consortium. The Quality Indicators were validated in a study conducted by Joy Zabala and supported by NATRI. During our study, we interviewed

268 teachers and audio taped the responses. The form consisted of a series of questions on 14 different topics related to AT and the questions ranged from structured to open-ended.

One of the questions that we asked the teachers was, "Some schools develop written plans to guide how the AT will be implemented following the IEP meeting for individual students. Does your school do anything similar to this and what is included?" Follow up questions were, "Who is responsible for implementing the AT plan? Is there a required or recommended form used by your state for a written AT plan? What is included in the plan?"

Of the 116 teachers that answered the questions related to AT implementation, 52% reported that they did not use any type of AT plan, 27% used the IEP (not a plan), 10% weren't sure if they used a plan (so it's very unlikely that they did, 8% said they used a plan, and 3% said they used a plan "sometimes".

Briefly, an AT plan should be designed to help IEP team members address key implementation issues by:

- Identifying the point of contact—the individual who coordinates the plan and monitors its implementation.
- Assigning responsibility for the AT—who orders or purchases the AT, maintains it, etc.
- Specifying training—who needs what training, when it will be scheduled, and who has responsibilities for providing the training and follow-up.
- Connecting AT to IEP goals—which school and home IEP goals will be met through AT use.
- Monitoring and evaluating use—which instructional strategies will be used, which data recording system will be used to monitor and evaluate use, how families and school personnel will stay in communication, and who will be responsible for these tasks.

So the question to the group is, "What are the challenges and solutions to planning for AT implementation in the schools or other site-based practices?"

- **Re:Experiment in information dissemination by Linda Resario** on Sep 13, 2006
I teach in a suburban high school with a high number of immigrant students. One of the first problems we have is figuring out if a student should be considered Special Ed. I think we place too many kids in Special Ed who are really just having problems with English. Anyway, that's not my main point. You asked about AT implementation. In my school I never hear teachers talk about AT. They talk about particular pieces of equipment or computer programs and things like that. But they don't talk about AT as a subject. Many of the teachers are afraid of technology. They don't use their email or blackboard.com. I think we should have training at the beginning of each year that talks about "AT" and makes teachers more comfortable with it. I don't really think my school is very different from many others. I know if I had to answer the questions you listed I would have to say that we don't have any

type of AT plan. But it could be that we have one and I'm not aware of it. I'm going to ask around school and will let you know what I find out.

I'm glad to find this website by the way. I've learned a lot already, especially with the glossary and the family guide.

- **Re:Experiment in information dissemination by Margaret Bausch** on Sep 14, 2006
I'll be interested to learn what you find out about AT Implementation Plans in your school or school district. To see an example, you may download a printable (pdf version) of an AT Implementation Plan Form from the NATRI website <http://natri.uky.edu>. Just click on the link in the yellow box in the left hand column from the NATRI home page.

Are others using AT Implementation Plans?

- **Laptop's by Link** on Sep 08, 2006
I am searching for information about laptops. Is there any that anyone is familiar with that are very lightweight. Student needs a laptop that can do word processing, spreadsheets, powerpoint and internet capabilities. Also one that is easily carried around and easy to open with one hand. Would there be any that anyone has had experience with?

Link

- **Re:Laptop's by diane** on Sep 10, 2006
I have an iBook G4, I know there are newer models available. It can do all you are asking and I opened it easily with one hand. I use both PC and Mac based computers and much prefer the mac so I don't need to worry about anti viral software ruining my child's access to much needed technology.
At least that is a start!

- **Re:Laptop's by Thomas Rosati A.T.P.** on Sep 18, 2006
I have recommended and gotten laptops for students, primarily without physical restrictions that might require lighter weight units. Not all of these criteria have to be met, but the more that are, build a stronger case for the use of the laptop.

Here are some criteria that I have developed for when a laptop is appropriate.

- 1) The student has a need to have written work more than a few paragraphs at a time
- 2) The student is moving between multiple classrooms where access to classroom based technology and training of staff are limited.
- 3) The student will be maintaining a less restrictive environment, through the use of technology.
- 4) The use of technology will not be independent or transparent for the student because of poor interfacing with district systems. An example would be the need to sit facing backwards in a classroom to use classroom systems set up in a center based configuration.

My laptop of choice for flexibility is a convertible tablet laptop. This is a laptop

computer that the screen can flip around and lay flat so that it can be written on with a special stylus/pen. They cost about the same as a new mid range laptop. While this has many good additional features, I will recommend it specifically if any of these conditions are seen.

- 1) The student has a clear advantage in recording their work when written instead of typed.
- 2) The student is unable to write appropriate length work due to fatigue, or severe processing problems that can be deciphered only by the student.
- 3) The student is in science or art courses which require extensive drawings to be created by the student.

I have been asked at C.S.E's about using older laptops. If word processing and some smaller programs are the primary use, then they may be sufficient. An older laptop will probably be insufficient if voice recognition, or graphics heavy programs like Kurzweil 3000 will be used.

Three other points of interest regarding laptops.

If there is a need for an A.A.C. device that costs over \$2000, a CSE should consider a laptop based system or using a good laptop with appropriate software like Speaking Dynamically Pro. Many of the higher end devices are now dedicated laptops with the particular companies linguistic systems added. A plain laptop can do most of the same things with a greater versatility, but because Medicaid and Medicare requirements only allow dedicated devices for reimbursement from their programs, many districts only consider these devices, when they could have a more flexible system for less money. A district does not HAVE to have a Medicaid approved machine. Smaller communication devices like a Mightmo are based on PDA technology and are harder to modify in the Microsoft CE language. Smaller color units may also weigh as much or more than a laptop.

A laptop should not be denied if the student may be too rough or likely to drop the system. There are tough book computers built to military standards which are about twice the cost of a regular laptop and similar in pricing to most computer based A.A.C. devices. A longer warranty is a less costly alternative that could also be considered.

The new Apple dual processor laptop is a reasonable recommendation if there is a Mac system at home or school and the reverse is available in school. Be aware, they are about \$500 more than a dual processor pc only laptop, and you have to add the windows full operating system to run windows programs (an additional \$200.)

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- **What components does one look for in a Good AT Evaluation?** by [link](#) on Sep 09, 2006
Student has mobility challenges but does walk and has a power wheelchair for longer distance if he needs it. He will be using a laptop and can finger type a standard keyboard with one finger (lefthand) cannot use the right hand. He also is challenged with speech (articulation) but talks, but hard to understand, so were also looking for AT for when he does oral speech's. He does have a DynaMyte if needed that he has had since he was in

Kindergarten. He is now in Middle School. The hand he does use is weak and he is not able at this point to carry a lot of weight. He is able to pull a "roller backpack". He has joined the school band (just starting out) and has been assigned the Snar Drum. I dont' know how he is going to accomplish this, but there has to be a way for him to do this. This is the Middle School band, and if he is able to do this I believe it is next year that he do Marching Band so then it will be How will he do this? Is there AT for this? Does anyone have any input into what I need to be looking for in a quality AT evaluation, or could point me in that direction?

Thanks for any ideas or input.

Link

- o **Re:What componets does one look for in a Good AT Evaluation?** by **Sue Zapf** on Sep 09, 2006

Does the student's dynamite hook up to the computer that he could use it for typing?? Also what is his ability with finger dexterity, if you want light a PDA may also be helpful b/c light and can print to printer either wireless or hook it up. It appears that your student does have issues that can involve AT, remember AT can be a product and/or service. I feel that a good AT eval must look at the student's skills/abilities/needs, the environment, tasks to perform and what he is using currently (Tools). The SETT is a good worksheet to help you look at these areas and address them in your report. In terms of assessment the MATCH or MPT model also looks at these components but goes further into looking if this student is a candidate for AT by addressing the students interests, psychosocial components and soical aspects which are critical factors to the success rate of AT use. There is a match analysis which gives you a score which can help justify your decision. OFten times we jump to the person needs AT instead of determining if the student is a good match for AT. Hope this helps. Sue

- o **Re:What componets does one look for in a Good AT Evaluation?** by **Melinda Ault** on Sep 18, 2006

Hello,

Doctoral dissertation research by Deb Case was supported by NATRI here at the University of KY to examine what you are looking for. She validated (using expert opinion) 63 Essential Elements of an AT Assessment and 31 Essential Elements of AT Assessment Reports. You can find those results at our NATRI website at <http://natri.uky.edu/findings/presentations/2003/csun2003delphi/delphi.html>

Click on the powerpoint slides and essential elements handout to view the results.

This may unfortunately be an excellent example of the difficulty of translating research into practice. That is, Deb Case's research has some valuable lessons for the field but probably is not being distributed widely enough to make an impact in the schools. She is in the process of writing the information in a book chapter form that is easy to read and apply in schools, but as we've said before, research findings are not disseminated as quickly as those in the field need them. Let me know if you find her results helpful.

Melinda

- **Re:What componets does one look for in a Good AT Evaluation?** by **Thomas Rosati A.T.P.** on Sep 18, 2006
Melinda,
The powerpoint file is accessible but the main report /resources/presentations/tam2003/delphi/resources/ImpPlanform060124.pdf Is currently giving a bad link error message.

- **Re:What componets does one look for in a Good AT Evaluation?** by **Link** on Sep 18, 2006
Melinda,

I tried the link but got error, File not Found in all three areas: Assisitive Tech Resource, Assisitive Tech Planner, and NATRI Info.

- **Re:What componets does one look for in a Good AT Evaluation?** by **Melinda** on Sep 19, 2006
I'm sorry about that. I knew the link to the report was not working, but you should be able to click on the Powerpoint handouts pdf as well as the pdf of the Assesment and Report Elements. You will be able to find a description of the study and the results within the Powerpoint slides. It is at <http://natri.uky.edu/findings/presentations/2003/csun2003delphi/delphi.html>.

Let me know if you still have trouble and if this provides any useful information for you.
Melinda

- **Re:What componets does one look for in a Good AT Evaluation?** by **ELS** on Sep 24, 2006
I didn't have any trouble accessing the slides, but I had some trouble reading and understanding them. What would you say are the main points we should take away from your study?
Thanks.
- **Re:What componets does one look for in a Good AT Evaluation?** by **Melinda Ault** on Sep 26, 2006
Yes I apologize. I'm sure it is not so easy to interpret the powerpoint slides. I think what you should take away from these slides is that Deb Case asked a panel of experts to identify what they considered to be the essential elements to include in an assessment technology assessment and an AT assessment report. What they identified as these elements is included on the document labeled "Assessment and Report Elements." In that document, she lists the elements that the experts agreed upon as being essential for a quality assessment and report. The elements in regular font are the elements identified for the assessments and the italicized fonts are the elements identified for the reports. So for example, under the category called "Background Information: Communication" the elements for the assessment that should be included are assessing the student's receptive language, assessing the student's expressive language in terms of what method of expressive communication they use, and assessing a student's expressive communication when they use an AAC device (if applicable). In terms of the report, the report should include information about the student's expressive communication, and should discuss if communication is an area of concern for this student.

I hope this helps. If you would like to email me at mjault@uky.edu, I can send you a DRAFT of a preliminary document that explains this much better.
Melinda

- **Parent access to info on AT- where do we find it?** by **diane** on Sep 10, 2006
I am a parent of a 7th grader using AAC (a minimerc), Boardmaker, Speaking Dynamically Pro, Pix Writer and more. I have found that attending conferences every other year (it is tough to get away) either Closing the Gap or ATIA has been so helpful and encouraging. When I first attended CTG I was heartened by the numbers of wonderful academics/technicians working hard to solve communication needs of students like my daughter. It sparked an interest in me to learn more and has resulted in my daughter being a much more fluent communicator and has helped me empower the teachers/staff who work with her.
I also subscribe to listservs, frequent many websites periodically and read what I can find. I know it takes time but my daughter is flourishing and that is a strong motivator. She has been using AAC with dynamic display since Kindergarten and has severe verbal apraxia, ADD, intellectual disabilities and more.
 - **Re:Parent access to info on AT- where do we find it?** by **Melinda Ault** on Sep 11, 2006
Diane,
Thank you so much for your input as a parent. I think we can add attending conferences to the list of "strategies for accessing research." It was interesting to hear from your perspective how helpful it has been for you, even though I'm sure it is difficult to get away.

A listserv that you are probably familiar with, but others may not be that I highly recommend is on the Quality Indicators for Assistive Technology Website at qiat.org. This listserv is full of practical information and there are many participants who are willing to provide extremely helpful information. Check it out if you have not.

You say that you subscribe to listservs, read websites, and other things. Can you pinpoint where you have been able to access the most helpful information specifically in regards to research findings? Or is really a combination of all the things you are doing?
 - **Re:Parent access to info on AT- where do we find it?** by **Lynn James** on Sep 11, 2006
I am a parent also of a child with intellectual challenges and speech impairments. I have been taking Kevin to therapy for years; he is now 15 and he is making slow progress. I have asked the therapist about AT and she occasionally uses a computer but not to much effect. I have attended many conferences, workshops, seminars, etc. and it seems like there is much out there although I am not technologically knowledgeable enough to know what is appropriate for my son. Indeed, I know how hard it is to get away. I have also requested AT evaluations at IEPs and they continue to say it is not appropriate for my son. I know this can't be true and suspect the evaluations are not being done by qualified people with the same agenda as mom: what is available to help my son reach his academic and social goals. Have you any advice or direction?
 - **Re:Parent access to info on AT- where do we find it?** by **Margaret Bausch** on Sep 12, 2006

Lynn, you have the law on your side. Remember the law defines AT as both devices and services. The term assistive technology service was defined as "any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device". As a result of this Act, the array of services that districts must provide, when needed, is vast and includes "the evaluation of the needs of an individual with a disability, including a functional evaluation of the individual in the individual's customary environment". Can you approach the school system with this information?

- **Re:Parent access to info on AT- where do we find it?** by **Sue Zapf** on Sep 12, 2006
Lynn,

Look at your sons IEP and if there are goals/objectives that have been the same for more than one year ask the team why your son has not mastered these goals, then state you feel that an AT eval needs to be done to assess if there is AT that can help master these educational goals. You can request for an evaluation and you can also request the credentials/experience of the AT personal conducting the evaluation-it has to be done with qualified personnel. You can also state that if they refuse to do an eval then you would request for outside eval to be done to determine the need Good luck.

- **Re:Parent access to info on AT- where do we find it?** by **Eric** on Sep 13, 2006

This is really where the rubber meets the road so to speak. This is the kind of "reality gap" between research and practice that I thought this discussion would address. I've read the answers so far, and, while I'm sure they're well-meaning, I wonder how helpful it really is to tell you that the law is on your side. Clearly you're getting resistance from the IEP team and they're probably familiar with the law. Who is on your IEP team? You might try bringing new members onto the team (which is also your right). Even if a parent advocate or other person of your choice might not be more knowledgeable than you about AT research, they may be able to play the role of the squeaky wheel, allowing you to guard more amicable relations.

Your son is now within transition planning age, so you might use that to request a specific AT evaluation. It sounds to me as if you need some new perspectives at the table.

Finally, if there's no action from the IEP team, you might consider mediation. There's a lot on the FCTD website about mediation and the CADRE organization specializes in it.

Just some thoughts.

- **Re:Parent access to info on AT- where do we find it?** by **Margaret Bausch** on Sep 14, 2006

The comment that the law is "on the family's side" was not meant as a comment from a "research perspective". It was only a reassurance that the law is on her side. That's always a good place to start. I have been in many districts where teachers, parents, and administrators are unaware of the laws related to AT. They typically know about AT

devices, but are much less familiar with AT services. Sometimes when a district understands there are federal mandates that support a request, their tone changes a bit. I agree that there are many other things to consider including the suggested new IEP team members, parent advocate, and mediation. In fact, I had to request a due process hearing for one of my own children. In that case, I was glad that I was familiar with the federal and state statutes and regulations – it was obvious that the school district was not.

- **Clearinghouse for AT Research** by **guest** on Sep 13, 2006
The idea of an online clearinghouse for AT research was brought up under a different discussion thread and but was not discussed further, so I thought I'd mention it again. Does such a clearing house exist? What a wonderful resource it would be to professionals, parents, and others interested in AT research and information.

- **Re:Clearinghouse for AT Research** by **Jackie Hess [SI Faculty]** on Sep 18, 2006
While it's not a clearinghouse for AT research, and its website is relatively new, you might want to take a look at the CITED project. Here are a couple of self-explanatory quotes from their website:

"The Center for Implementing Technology in Education (CITED) supports state and local education agencies in developing systems that effectively integrate instructional technology so that all students achieve high educational standards."

"CITED is interested in assisting state and local teams to implement and evaluate evidence-based practices. We have adapted the CREATER Model, developed in R. Havelock & J. Hamilton (2004), *Guiding Change in Special Education: How to Help Schools with New Ideas and Practices*. Thousand Oaks, CA : Corwin Press (2004)."

Their website is: <http://www.cited.org/default.asp>

The U.S. Department of Education has recently reorganized a number of their offices and programs, to better reflect their emphasis on research. A number of those professionals usually follow these discussions and I suspect they find very interesting what the field believes it needs.

In my experience, there's never been such a thing as a successfully created "one-stop shop" for any topic, whether it's education technology writ large or assistive technology more narrowly. Over the years I've seen many organizations purport to be one, but they never seem to take. We do, however, have a range of national and regional programs that have been increasingly trying to reflect the Department's emphasis on research-based practice. That doesn't make it easy, I know, but there is a lot of information out there, whether on the FCTD website, or NATRI's, or ATA's, or CAST's.

The problem I see, however, is that access to the information is a necessary but not sufficient condition. There are so many school-based conditions that have to exist to allow evidence-based practices to become reality. I'm also afraid that more than a

few research results are based on interventions that are so "high-octane" (significant level of technical assistance and teacher stipends being provided throughout the trial, for instance) that, although their results may be both scientific and positive, they are not realistically scalable without the same level of TA and stipends (which rarely exists post-research phase).

Six years ago, through very odd circumstances, I wound up in the classroom for two years (teaching 3rd grade - a general ed class with a significant number of special education students). Having been involved in education up until then only from the national policy and training levels, it was a HUGE eye-opener. It changed almost every belief I had about what can happen in a classroom, under what circumstances, with what likely outcomes. I now believe that no one should be allowed to make or implement education policy without having had to spend a year or more facing 25 faces, squirmy bottoms, and wriggly feet every morning, with the expectation that you and you alone (team teachers excepted) are responsible for getting them intellectually from point A to point B within a matter of months: -)

- **Re:Clearinghouse for AT Research by Melinda Ault** on Sep 18, 2006
See my post of 9/18/06 under the Thread "Strategies for Accessing Research." I continue the idea of AT clearinghouses there and ask others for input. Let's see if others have some additional information!
 - **Re:Clearinghouse for AT Research by guest** on Sep 18, 2006
Thanks - I must have missed it.

-
- **Support for students by Quinn Hartzheim** on Sep 18, 2006
I have a few years of experience working with children who have autism. I have noticed that in the school setting and during in-home therapy it is important to monitor the amount of support given by line therapists, teachers, and aides. In working with different kids I have noticed that giving more support than what is needed can actually hinder growth and independence.
One child that I am working with displays more inappropriate behavior when the student's aide is present. These behaviors take away from his ability to do what is expected of him and they set him apart from his peers. For this reason we have decided to limit the amount of time that the aide spends with him, thus far this has been a successful decision.
Another example of 'less is more' is one that I experienced while doing in-home therapy. The child was spending so much time with a therapist that it was causing a great deal of anxiety and frustration. I can't say that I know anyone who enjoys someone constantly looking over her shoulder or being redirected. The amount of therapy the child was receiving counter productive. This is a great reminder to everyone to consider the antecedant or cause of a child's behavior. Due to the nature of the disability many students have great difficulty communicating their needs. We must also remember that many students do have the ability to voice frustration (whether it is verbal or non-verbal), let's not forget to listen.

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- **Is there any research that has been done on....** by **Thomas Rosati A.T.P.** on Sep 18, 2006
Two areas I have looked for valid research on and have not found information are:

The percentage and type of disabilities where A.T. is actually listed on I.E.P.s

Who is actually performing A.T. evaluations for C.S.E.s and what are their qualifications/experience in special ed. educational A.T.

States that require A.T. evaluations to be completed by a certified individual, and what certifications are being deemed appropriate.

One reason there is limited research on A.T. is most Universities do not have an A.T. program. The University where I am a professor is expanding more into Assistive Technology at my urging, but I am an adjunct professor, and the coursework I do is still considered to be elective. This means that the students do not have to have coursework in A.T., they do not have to prepare for an A.T. question on their comprehensive exams, and they so far have not been able to submit original research projects on A.T. subject matter.

Since the University programs are where the majority of original research emanates, not being a recognized or required field of study, will limit the possible research studies that are done.

- o **Re:Is there any research that has been done on....** by **guest** on Sep 19, 2006
Very good point - AT is still a relatively young practice area and I think we have a ways to go in terms of formalizing and standardizing our services. That takes time, but we will get there eventually, I believe.

- **Re:Is there any research that has been done on....** by **Margaret Bausch** on Sep 22, 2006
FYI - We, at NATRI, just finished entering data on a national survey of Institutes of Higher Education (IHE). We surveyed departments of special education, physical therapy, occupational therapy and communication disorders. (We chose these programs on the advice of our advisory board.) Among other things, we asked if the department had AT courses at the graduate and/or undergraduate level and if they were required or elective. We also asked about the content of the courses. I will try over the next few days to extract some preliminary findings and share them with the group.

- **Re:Is there any research that has been done on....** by **ASD** on Sep 22, 2006
Thanks! I think a lot of us would be very interested in those results. The issue of pre-service and in-service training in AT has been discussed many times in these Family Center discussions. Usually people agree that there isn't adequate in-service training and almost no pre-service training. There are always a few people who write in, though, to describe their universities' courses in AT. I've always wondered what the national picture is. Hopefully your study will shed some light on that.
Alexis

- **Re:Is there any research that has been done on....** by **ELS** on Sep 24, 2006
Did you share the findings of this study? If so, could you point me toward the post? Thank you.
ELS

- **Re:Is there any research that has been done on....** by **Margaret Bausch** on Sep 26, 2006
Thanks for your interest. Hopefully, I will have some preliminary results for the group on Thursday morning. We have been busy analyzing the data as we just finished entering it last week and checking reliability on it over the weekend.

- **Re:Is there any research that has been done on....** by **Melinda Ault** on Sep 26, 2006

I may have a little bit of information for you on some of these topics as it relates to what we did at NATRI. In terms of the % and type of disabilities where AT is listed on IEPs, we have data from 699 students across the country where people reported to us demographic information about their students who use AT. We did not get a representative sample of all students across the country, but we did get a good representation across disability areas, ages, and types of AT. To see those data represented in bar graph form, go to

<http://natri.uky.edu/findings/presentations/presmenu.html>, click on CSUN 2006 ppt and take a look at slides 20-23.

Also we have some data on people who perform AT evaluations in school districts. We had over 200 people who participated in our research that were identified by their district as either being AT specialists or as being responsible for providing AT services in their district. Data on these people can be found by going to <http://natri.uky.edu/findings/presentations/presmenu.html> and clicking on TED/TAM 2005. I think you should be able to understand the data presented there and there may be some of the data that you are looking for. Let me know if it is or isn't the data you are looking for. Our data indicate that persons providing AT assessments are not necessarily certified.

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- **Who determines the AT research agenda?** by **D. Davis** on Sep 19, 2006
I was about to reply to Quinn's last post, saying it seemed like a good topic for research. (I too have noticed that less support, at key times, has resulted in "breakthrough" results.) That got me wondering about the process for deciding on an AT research topic, getting it funded, getting school systems and others to participate, etc. I'd be very interested in learning about the process. Does the U.S. Department of Education have a well-known (at least to some people) research agenda they're pursuing? Is anyone else funding AT research besides that agency? Is all of the research conducted by universities? These may seem like stupid questions, but if you're not in the research field, the answers aren't all that obvious. (Particularly if you're sitting in a small city in the mid-west, like I am: -)
 - **Re:Who determines the AT research agenda?** by **Melinda Ault** on Sep 20, 2006
In NATRI's particular case, our research was funded by the U.S. Department of Education as a cooperative agreement. That is, they had a research agenda that they wanted studied and we were the ones that studied what they wanted. After the 1997 Reauthorization of IDEA, the federal government realized that they really did not know a whole lot about the status of AT in the United States so this was what NATRI studied for them. The overall goals of NATRI were: (a) to examine the factors related to the planning, development, implementation, and evaluation of AT services in schools, and (b) to disseminate the findings in ways that will assist school personnel to develop and improve AT policies and practices for students with disabilities. Point (b) is exactly what we are trying to address in this discussion forum.

I do believe that the federal government has a research agenda that they pursue. Do others know how they go about deciding on the agenda? Also much of the research is conducted by universities or organizations whose specific purpose it is to do research. Would others say this is accurate? And by the way, thanks for the questions- they are not stupid at all!

Melinda

- **Widely Adopted Research Based Practices by Melinda Ault** on Sep 20, 2006
It occurs to me as I think about research-based or evidence-based practices that some programs or concepts really get widely adopted and used in the field whereas others do not.

For example, certain reading curricula take off and get used in many school districts around the country. In KY, we had a certain math curricula used in the early elementary grades that was widely used. One aspect of this math curricula involved bears that represented yesterday, today, and tomorrow. In every early elementary classroom I went in for years in KY, those little bears were there! And teachers used them the same way! My point is that this math curricula was widely adopted.

Similarly, and more applicable to AT is the SETT format that Joy Zabala developed and teaches. In our travels around the country, we found many teachers nationwide who know about and use the SETT format.

What is it about certain curricula or concepts that cause them to be widely accepted, which I think is ultimately what we want for other research-based strategies. Can we identify what they have in common or how the word was spread so that we could apply it to other research findings that should be used in classrooms?

- **Re:Widely Adopted Research Based Practices by Andrew** on Sep 22, 2006
Quite frankly, I think it has a lot to do with marketing. And I don't mean that in a bad way. If people don't know about something they can't adopt it. The downside is that in the past 25 years, there's been a lot of great programs that never went anywhere because they came from companies or universities without the resources to market them. The ones that have made it have often fallen into the infotainment category. For schools to purchase CDs for instance, the price point has to be low. For that to happen, the product needs to be consumer-oriented, often something parents would buy for a kid to use at home. Not necessarily a research base there. Just engaging graphics that hold a kid's attention and result in more time on task for drill and practice. Again, not a bad thing. But I don't see any particular connection between technology in the classroom and research results. Maybe it's too soon.

- **Re:Widely Adopted Research Based Practices by Melinda Ault** on Sep 22, 2006
I think you are right that it does have a lot to do with marketing as unfortunate as that may be. For instance I am taking a class in Augmentative and Alternative Communication right now. In that class we talked about the widespread use of graphic symbols with so many students in classrooms today. If you go into classrooms, you will see that these symbols are everywhere. However, the research based to support their effectiveness is really not out there. Their success however, I believe is due to the vendor who has marketed them effectively.

There are programs however that have "taken off" such as the Joy Zabala's

SETT format and the math curriculum that I described in an earlier email, that I don't see as being driven by marketing. I wonder if there are other factors that those programs have used to really get the word out? Have they been able to deliver many inservice trainings across a state or across the nation? Have they been spread by word of mouth? Was there some pivotal event in their research or dissemination that drove their product to catch on? I don't have the answers to any of these questions, but it's interesting to think about, because if we can figure out some key elements to their success, we could more effectively disseminate other research findings.

- **Re:Widely Adopted Research Based Practices by Guest** on Sep 22, 2006

I think one obvious factor in dissemination and use of a particular product is ease of use and simplicity. Some of the products that are available have so many features as to make them incomprehensible and intimidating to use. I would argue that SETT has been popular because it's easy to understand and assimilate. Some of the other consideration tools have 30 pages and can only be contained in a 3-ring binder.

- **Re:Widely Adopted Research Based Practices by ac** on Sep 25, 2006

I think that the timing was right for the SETT framework because there really wasn't much else out there at the time in terms of a methodological approach to AT implementation in the school setting, that I'm aware of. I also think that the originators of the SETT framework did an excellent job promoting it, presenting on it all over the nation for many years.

- **Re:Widely Adopted Research Based Practices by Margaret Bausch** on Sep 27, 2006

I agree - timing is often the determining factor in a product's success - and good marketing whether done professionally or by hard working individuals doesn't hurt either!

In response to the earlier post in this thread about successful use of technology in the classroom, there isn't much available. However, at the risk of sounding like I'm "advertising" for a former colleague, Ted Hasselbring, there is an abundance of research on a product developed initially through funds from the Office of Special Education Programs, U.S. Department of Education, now known as Read 180 and published by Scholastic. This is the most successful example of "research-to-practice" that I know. The product was developed at a university, researched in schools, and is now a commercially available product. It has been, and continues to be, the subject of numerous research studies. As in other cases mentioned, there has been good marketing and the timing was right for Read 180, too.

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- **Barriers to practice by guest** on Sep 22, 2006

You asked in your introduction about barriers to practice. Here's one that I, as a high school

principal, face. I've been reading lately about the effectiveness of PDAs as assistive technology for students with disabilities that make personal organization difficult. Even if this was based on the soundest research, I don't see any way to allow them in school. Our theft/loss rate with anything electronic is so high that I can't justify their purchase (more than half our SpEd students are Title 1 and couldn't afford them on their own).

Another barrier is getting teachers to want to be trained. Sure, I could make training compulsory, but that would hardly make for good attitudes. Plus, we've had to institute compulsory training on new state assessment tools and a number of other topics that the district and state value more highly. AT research training, quite frankly, seems like a luxury when you're putting out fires all day dealing with keeping the kids safe and trying to make AYP.

Still I'm thinking about assigning an AP to this. I'd like to get on board the research-based practice train, but without someone focusing on it, it's not going to happen.

G. Porter

- **Re:Barriers to practice** by **qc** on Sep 22, 2006
I can sympathize with the problem of theft when it comes to portable devices such as PDA's and Ipods. Maybe someday they will come up with wireless security for those devices, so students can leave the school grounds with them.

Annette Cerreta
AT Specialist

- **Re:Barriers to practice** by **Robert Green** on Sep 24, 2006
Perhaps we should say that real life is a barrier to research based practice. I wonder if research studies should include a section that discusses the potential barriers to whatever practice has been studied. That might make the study ring more true with the people charged with implementing the results. And it might make it easier for them to think about the barriers and how to overcome them.
- **Re:Barriers to practice** by **Margaret Bausch** on Sep 26, 2006
What a great dose of reality! It's true that every new practice has barriers, but this one, in particular, has more than its share: start up cost, training, theft, loss, damage, attitudes. Some of the most effective "new practice implementation strategies" that I have seen and used is to start small, with those who are willing, and have an agenda or specific plan in mind when starting. In a rather open-ended case like this (in other words, lots of options on how to use the device), the initial group can come up with the implementation plan or strategy. Often, when other teachers/students see what others are doing, they are drawn into the excitement. I know that this doesn't hold true for everyone, but peer pressure usually helps. I'm not sure about the theft issue - any ideas out there?

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- **Geographic influences on research** by **Rose** on Sep 24, 2006
To those of you who conduct research:
Do you find that the area of the country in which you conduct a study affects the outcome? There seems to me to be such huge differences in education practice throughout the country that I'm wondering how researchers come up with valid results nationally, particularly when sample sizes are often so small. If a study is done in a rural district in the south, can we assume its validity for an urban school in the northwest? I suppose it depends on the research topic, but I'd be interested in your reply. Thanks.

- **Re:Geographic influences on research** by **Margaret Bausch** on Sep 26, 2006
A great question! As you probably know, the larger your N (number), the more likely it is to generalize to the entire population. Additionally, the more diverse the population of the sample, the more likely the results will generalize an entire population. When we conducted the State Case Study research at NATRI, we selected 10 states that were geographically diverse, (CA, KY, FL, MA, OR, TX, MT, VA, KA, WI) and we looked at districts that were classified as small, medium, and large. We also took into consideration the AT service delivery models of the districts (state, regional, district), and the length of time that an AT program had been established in the district. One of the things that we are interested in is comparing some of those populations. In other words, we hope to provide aggregated data and disaggregated data based on some of those variables.
So, to answer your question, you are correct. There are always limitations to research. We can not assume that the findings of one study are valid with other populations. Thus, the need for replication of the research with different populations, under different conditions, and with other variables.
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- **Replicating research** by **JE** on Sep 25, 2006
In medicine and science, from which so much of the research model now being transplanted to education comes, it's important to be able to replicate research findings. Given the problems that have been mentioned in this discussion, and many that haven't, how important do you think it is, Margaret and Melinda, for researchers to replicate studies to validate interventions? How likely is that to happen? How much validity should we assume in unreplicated studies?

- **Re:Replicating research** by **Margaret Bausch** on Sep 26, 2006
In another post, I mentioned the importance of replication. However, as you mentioned, there are many difficulties with this. The obvious issues are time and expense, however there are others. For one, the researchers must have a complete understanding the methodology used in the original study and replicate the study exactly. Now let's get even more complicated. The researchers must also know the limitations of the first study, and they must know which variables they will manipulate. Will they replicate the study with different students, a different number of students, students in a various geographic locations?

Let's look at a simple example; if a reading intervention is shown to be effective with 100 students when they are presented the information in groups of 5, will the results improve if the students are divided in groups of 3? Or, will the students, perhaps, show less improvement? Let's also say that there are 3 parts to the intervention presented in order of A, B, & C. Will the same results be found if the intervention is presented C, A, & then B?

These are questions that researchers grapple with when designing each and every research study and what makes research so time intensive.

- **Internet Access & Recreation** by **DM-Guest** on Sep 25, 2006
Looking for 'Internet Access' or 'Trail / park Access' . I am a retired sp. ed. teacher (HS, UM, UMD) who is looking for AT Research on 'Internet Access' (I heard their was a national comm. to set standards?) or 'Recreation' (i.e. camping or accessible trails). Internet based

learning is coming on strong, so we need to be on top of it. Also, recreation with a family focus can expand and support the curriculum. Can you describe your viewpoint ! DM

- **Re:Internet Access & Recreation** by **Margaret Bausch** on Sep 26, 2006
I'm not really familiar with much that has gone on with Trail/Park Access although I know that I have seen trails lately that have been wheelchair accessible. Does anyone know more about this subject?

As for my opinion on "recreation with a family focus", I agree, it can and should support and expand the curriculum. I think that often times, not always, families feel very limited in where they can go and what they do when they have a child with a disability. There are many considerations including access, safety, nearby medical attention if needed and of course, fun for the entire family!

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- **Research/Meta-Analyses on AT** by **Kyrie** on Sep 25, 2006
Thanks for the lively discussion of AT issues. It has been mentioned in some of these threads that there is not a lot of research on AT. Is there a lack of research on all areas of AT, or are there some areas of AT which are fairly well researched while other areas are neglected? Also, does anyone know of any meta-analyses or best-evidence syntheses that have been done on AT? I work at NICHCY and we are developing structured abstracts to make meta-analyses of special education research more accessible to teachers and parents (current abstracts are available at research.nichcy.org/search.asp). Other than a couple of meta-analyses which discuss computer assisted instruction (CAI), I have not found any meta-analyses which discuss technology or AT. Please let me know if anyone has come across an AT synthesis we could abstract. Thanks.
 - **Re:Research/Meta-Analyses on AT** by **Margaret Bausch** on Sep 26, 2006
Thanks for letting everyone know about the abstracts available on your website at NICHCY. You have always done great work!

To answer your question, I think research is lacking in all areas of AT. Though I don't know this for a fact, probably one of the most researched areas in the field is AT for communication, but there again, research is still in great need. As Melinda & I mentioned in one of our earlier comments, AT research is very difficult because the population of students using AT is so diverse, the devices are so numerous, and the different settings on the devices are so varied that it is impossible to conduct group research. If you want a job that will keep you busy for a long time, become an AT researcher!!

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- **Is funding for AT reserach getting better or worse?** by **guest** on Sep 26, 2006
Just wondering if either of you (Margaret or Melinda) could shed some light on the current state of funding for AT research in this country? Is funding for research improving or more limited than in years past?
 - **Re:Is funding for AT reserach getting better or worse?** by **Margaret Bausch** on Sep 27, 2006
I'm not sure if we can say that I can say that funding for AT is more or less that in years past, however, what has changed is the source of the funding and, therefore, the requirements for receiving funding. For many years, much of the funding for

special education technology research was funneled through the Office of Special Education Programs (OSEP), U.S. Department of Education. Recently, special education technology funding and much of the other educational research funding comes from the Institute of Educational Sciences (IES), U.S. Department of Education. Although there are separate competitions for Special Education and General Education, many of the awards are given in content areas (math, science, reading, etc.). Additionally, research grants funded by IES are held to very rigorous large group, experimental design standards that I explained in a previous post is not always appropriate for heterogeneous groups of students using assistive technology.

The mission of IES as taken from their website, <http://ies.ed.gov>, "is to provide rigorous evidence on which to ground education practice and policy. This is accomplished through the work of its four centers. Grover J. (Russ) Whitehurst was appointed to a 6-year term as the first Director of the Institute in November 2002." One of the four centers, the National Center for Special Education Research (NCSER) at the Institute of Education Sciences may be of interest to you. Information about NCSER can be found at <http://ies.ed.gov/ncser/>.

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- **Last day to post your questions and comments by JH** on Sep 28, 2006
Tomorrow, September 29th, will be the last day of this month's discussion, "Integrating AT research into practice." Please take this opportunity to post your final questions and/or comments. As always, the Family Center would like to thank the discussion moderators, Dr. Margaret Bausch and Ms. Melinda Jones Ault of NATRI, for their efforts throughout the month. Thank you as well to those of you who have followed the discussion and particularly to those brave individuals who posted. We hope to see you again soon online. We're in the process of organizing our first Assistive Technology Winter Institute and hope that many of you will participate. You can always communicate with us at fctd@aed.org and with me individually at jhess@aed.org.

All the best,
Jackie Hess

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- **Data on AT Personnel Preparation by Margaret Bausch** on Sep 28, 2006
Due to some complications, we haven't quite finished aggregating the preliminary data on AT personnel preparation in Higher Education. If we finish before this discussion ends Friday evening, we'll post the information and you can access it in the archives. We will also post the information on our website, <http://natri.uky.edu>.

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- **Summary Comments by Margaret and Melinda** on Sep 28, 2006
We would like to thank all those who participated in this month's FCTD online discussion forum on Integrating AT Research into Practice. We appreciated and learned from your insight into the topic, your comments, and questions. Several issues seemed to have been brought to the forefront including (a) definitions, (b) access to research, (c) barriers to implementing research, and (d) next steps in AT research. We have made an effort to provide a short summary of these key issues.

Definitions

A number of definitions seem to be causing confusion. The following terms were discussed:

Assistive Technology

AT seems to be a catchall term and is very difficult for administrators, families, teachers, or researchers to discuss AT when it is so broadly defined. Some suggestions for alternate definitions arose in the discussion. Jim Tobias suggested the following terms:

inaccessible: features that inhibit easy use by people with disabilities

accessible: features that permit easy use by people with disabilities

accessibility: features that expand the whole user interface to permit easy use by people with disabilities, or permit easy use of another

Dr. M. A. Pasha reported that CART-UK uses the following definition of AT:

“Assistive technology consists of a procedure(s), process (es), equipment(s), material, activity(ies) or system(s) that allows an individual or a group of people to perform a task they would otherwise be unable to perform or increases the ease and safety with which the task can be performed.”

Scientifically based research

The term scientifically based research comes from section 9101(37) of the Elementary and Secondary Education Act (ESEA) of 1965 (as cited in the IDEA Federal Register, 2006) and means research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs.

Research based practice/Evidence based practice

These two terms have not been defined by law and there is confusion as to the similarities and differences between the two terms.

Access to Research

There is a need to provide service providers and parents with access to research. Some suggestions included:

Administrators act as the conduit for passing research data along to practitioners

Create a clearinghouse for AT research

Employ good marketing strategies for disseminating information about AT

Implement better pre-service education on AT as well as exposure to research at the pre-service level

Utilize existing organizations that promote AT to disseminate research information

Subscribe to AT listservs

Attend AT- related conferences

Barriers to Implementing Research

A number of barriers to implementing research were identified and seemed particularly pertinent for AT research:

Lack of administrative support

Amount of time needed to implement new technology

Start up costs

Training needs

Possible theft/loss/damage of new technology

Attitudes of administrators, teachers, families, and students

Next Steps – What needs to be researched?

Since so much research needs to be done, there are a number of unanswered questions: What are the research questions that teachers, parents, administrators would like to have answered?

How can researchers help the practitioners?

Again, thank you for making this discussion a success. We hope we haven't left you with more questions than answers!

Sincerely,

Margaret & Melinda

Recommended Resources

WEB-BASED RESOURCES

- **The National Assistive Technology Research Institute (NATRI)** conducts research to identify best practices in assistive technology service provision. The NATRI website contains publications, presentations, and other resources on assistive technology topics including NATRI's current and past research. The website also provides a guide designed to help families, teachers, and administrators plan and implement AT as part of a child's IEP. <http://natri.uky.edu/>
- **John Hopkins University Center for Technology in Education**
The Center for Technology in Education is an organization that strives to improve the quality of life of children with special needs through teaching, research, and leadership in the use of technology. The Center conducts research on issues crucial to equal access to the general education curriculum for all students. The center provides resources through their website which includes an electronic learning community. Many resources focus on evidence-based instruction and technology practices. <http://cte.jhu.edu>
- **Quality Indicators for Assistive Technology Services**
The QIAT Consortium is a nationwide grassroots group that provides input into the ongoing process of identifying, disseminating, and implementing quality indicators for assistive technology services in school settings. These indicators can be used as a tool to support schools, AT service providers, consumers, researchers, and policy makers.

The QIAT web site provides access to the work of the QIAT Consortium in the form of a matrix of Quality Indicators for Assistive Technology Services in School Settings; forums for participation in the work of the Consortium; summits and presentations related to the development and sharing of QIAT; and opportunities to participate in research related to this work. <http://sweb.uky.edu/%7Ejszaba0/QIAT.html>
- **Assistive Technology Research Institute**
The Assistive Technology Research Institute, at College Misericordia, conducts research and provides information and education in the application of assistive technology and universal design principles.

The Institute activities include research into the usability of assistive technologies and universally designed products. The website includes information on current and completed

research projects and other assistive technology resources.

<http://atri.misericordia.edu>

- **EdTechNot**

This website contains links to research on educational technology, including Ask ERIC,

<http://www.edtechnot.com/notresearch.html>

JOURNALS

- **Journal of Special Education Technology**

This journal is a professional online and print publication that presents up-to-date information and opinions about research, policy, and practice related to the use of technology in the field of special education.

<http://jset.unlv.edu/>

- **Special Education Technology Practice**

This journal is a professional print publication that contains research articles, product reviews, and editorials designed to support professionals in the field of special education.

www.setp.net

ARTICLES

- Edyburn, D.L. (2004). Consumer or producer of assistive technology **research: Has NCLB altered your role?** Closing the Gap, 23(3), 12-13,24.
This article outlines a strategy for creating collegial study groups to examine issues of NCLB, research, and assistive technology. It also contains readings and resources to facilitate four study group sessions.
- Blackhurst, A. E. (2001). **The role of theory and research in practice.**
Available from the National Assistive Technology Research Web site: This article published on the National Assistive Technology Research Institute site explores the interrelationship among theory, research, and practice. <http://natri.uky.edu/resources/reports/theory.html>

PRESENTATIONS

- CSUN 2006: **The National Assistive Technology Research Institute's "Top Ten" List of Findings**
This Powerpoint presentation was presented by Melinda Ault, NATRI project director, at the 2006 CSUN conference. The presentation translates six years of research findings on the status of assistive technology in schools into information that educators and technologist can use to inform their practice.
PDF (12.5 Mb) - <http://natri.uky.edu/resources/presentations/2006/CSUN2006DM.pdf>
PPT (2.2 Mb) - <http://natri.uky.edu/resources/presentations/2006/CSUN2006DM.ppt>