



IN THIS ISSUE...

Universal Design for Learning: All for One...

The goal of universal design (UD), whether architectural or educational, is the achievement of accessibility for the greatest number. UD, most agree is aimed at meeting the accessibility needs of a diversity of users, as opposed to the needs of the average user. To Dr. Sheryl Burgstahler, Director of DO-IT at the University of Washington, there are no degrees of accessibility in universal design. She recalls a recent incident with a subcontractor that highlights her notion that accessibility has no degree; a design is either accessible, or it isn't.

"We subcontracted with a group to help us with some web pages we were designing and stipulated that the design had to be compliant with Section 508 of the Americans with Disabilities Act and therefore accessible to people with disabilities. I had an argument with one of the subcontractors and told him that aspects of his web page design were not accessible. The contractor was taken back. He replied, 'You never said it had to be *that* accessible.'"

In terms of learning, universal design is defined as the design of instructional materials and activities that make learning goals achievable by individuals with wide differences in their abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage and remember. Universal Design

for Learning (UDL) is achievable via flexible curricular materials and activities that provide alternatives for students with differing abilities. These alternatives are built into the instructional design and operating systems of educational materials; they are not added on after-the-fact.

UD principles can be applied to lectures, classroom discussions, group work, handouts, web-based instruction, labs, fieldwork, and other academic activities and materials. These principles allow for multiple means of representation, expression, and engagement. According to Dr. Burgstahler, the following are examples of instructional methods that employ principles of universal design:

Inclusiveness. A UDL classroom environment respects and values diversity. Students are encouraged to meet with the teacher to discuss disability-related accommodations and other special learning needs. No student should be stigmatized or segregated. The privacy of all students is respected.

Physical Access. Classrooms, labs, and fieldwork are accessible to individuals with a wide range of physical abilities and disabilities. Equipment and activities minimize sustained physical effort, provide options for operation, and accommodate right- and left-handed students as well as those with limited physical abilities. The safety of all students is assured.

Delivery Methods. Delivery methods, including lecture, discussion, hands-on

activities, Internet-based interaction and fieldwork are alternated. Each method is accessible to students with a wide range of abilities, disabilities, interests, and previous experiences.

Teachers/instructors face the class and speak clearly in an environment that is comfortable and free from distractions. Multiple modes to deliver content are used. Printed materials summarize content that is delivered orally.

Information Access. Captioned videotapes are employed. Printed materials are available in electronic format. Text descriptions of graphics presented on web pages are provided, as are printed materials that allow students to prepare for the topic to be presented. Printed and web-based materials are presented in simple, intuitive, and consistent formats. Content is arranged in order of importance.

Interaction. Students are encouraged to interact with each other and with the teacher. Methods may include in-class questions and discussion, group work and Internet-based communications. Universal accessibility, without accommodation, is encouraged.

Feedback. Effective prompting during an activity should be provided, along with feedback after an assignment is completed.

Demonstration of Knowledge. Students should demonstrate knowledge in multiple ways. For example, group work, demonstrations, portfolios, and presentations as options for demonstrating knowledge can be utilized in addition to traditional tests and papers.

This issue examines Universal Design for Learning and the role of assistive technology in its implementation.

Sheryl Burgstahler Speaks

Her first husband was 19 years old when he acquired Hodgkin's disease. She had known him since seventh grade. After his diagnosis, radiation treatments penetrated his spinal column leaving him a paraplegic. A former football player, he was dead at age 24. Recalls Dr. Burgstahler, "Going through that experience, from beginning to end, made me more sensitive to the challenges that some people face" and gave her the impetus to pursue a career. "My husband went from being an athlete to being paralyzed. He didn't change, but his circumstances surely did, and the way others reacted to him surely did. Others figured we would quit and that he'd spend the rest of his life in a nursing home. But we didn't quit. We got married and tried to live a normal life, which included attending college."

Today, Sheryl Burgstahler is director of DO-IT (Disabilities, Opportunities, Internetworking and Technology) at the University of Washington. DO-IT promotes the success of students with disabilities in postsecondary programs and careers. The organization sponsors programs that increase the use of AT and the development of accessible facilities, computer labs, electronic resources in libraries, web pages, educational multi-media and Internet-based distance learning programs. DO-IT has been the recipient of many awards, including the National Information Infrastructure Award in Education, The President's Award for Mentoring, the Golden Apple Award in Education, and the AHEAD Program Recognition award.

Dr. Burgstahler is Co-Director of the National Center on Accessible Information Technology in Education (AccessIT). The Center coordinates a nation-wide effort to assist educational and governmental institutions in reaching the goal of making education-based information technology (IT) accessible to all students and

employees, including those with disabilities.

Dr. Burgstahler has published dozens of articles and delivered presentations at national and international conferences that focus on the full inclusion of individuals with disabilities in postsecondary education, distance learning, work-based learning and electronic communities. She is the author or co-author of six books on Internet use by pre-college students. Dr. Burgstahler has taught in middle school, community college and in college. She is Assistant Director of Information Systems and Affiliate Associate Professor in Education at the University of Washington. Her Ph.D. dissertation examined higher education computing services for students with disabilities.

Supporting our interview with Dr. Burgstahler are resources to assist parents, teachers, school district administrators and others in understanding, advocating and implementing universal design principles in education under the banner of Universal Design for Learning and its close relation, Universal Design of Instruction (UDI). We also feature members of our **Knowledge Network**. The members spotlighted this month focus on various aspects of Universal Design for Learning. We invite you to contact these members for further information. Please share this newsletter with other organizations, families and professionals who may benefit from it. We invite you to contact us at <http://www.fctd.info>. We welcome feedback, new members and all who contribute to our growing knowledge base.



Universal Design for Instruction: One for All

An Interview with Dr. Sheryl Burgstahler, Director, DO-IT

To Dr. Sheryl Burgstahler, the difference between Universal Design for Learning and Universal Design of Instruction is one of shading, not semantics.

“They’re not regarded as exactly the same,” she says. The subtle difference is this: “In most cases the term ‘universal design’ is applied to something, the universal design of an elevator, for example, or a house. It’s usually used in an architectural context. I use ‘Universal Design of Instruction,’ because the ‘thing’ that’s being designed is how I’m teaching something: the curriculum and the instructional methods.”

According to Dr. Burgstahler, Universal Design for Learning (UDL) is only somewhat different from its Universal Design of Instruction (UDI) cousin. “The Center for Applied Special Technology (CAST) has promoted [the UDL moniker] because UDL reinforces the ‘why,’” she explains. In her view, UDL “is about the same as UDI with the ‘learning’ aspect underlined in UDL.” She concedes that most professionals use both terms interchangeably, although she prefers “of instruction” because it most accurately describes her area of expertise: classroom instruction.

In distance learning, for example, which employs practices that might be classified as UDL, that term, she asserts, “would be too narrowly defined.” In a universally designed distance learning course, she adds, the website must be physically accessible to the participants, which goes beyond the purview of UDL. “In a universally designed distance learning course, I’ll ask, ‘How are your public materials presented on your website so that students with disabilities know that you have a commitment to accessibility and to letting them know where they can go to get

more information on that?" Universal design, she notes, is the broadest term applicable for distance learning, "and UDL can be construed as a narrower subset of it, or of UDI."

Educational Technology Must Be Compatible with AT

According to Dr. Burgstahler, for a web page, distance learning class or educational software, for example, to be universally designed, it must be designed to be compatible with existing assistive technology. "If you were going to have on-site instruction, then what you're saying is that your facility accommodates typical AT, which includes a wheelchair. That's what we mean when we say 'wheelchair accessible.' When you talk about UDL, UDI and technology, you are saying that the educational technology or the web page a student is using is accessible as much as possible without adaptation, but is also compatible with existing AT that students might use."

AT automatically becomes part of any discussion of UDI, she says. "It's always part of the definition ... there are those who do not see it that way but it's clear to me that it is. The goal is to make everything accessible to everyone, but there is always some limitation. The idea is to look at all the diversity in the population when you develop your application, rather than looking at the average user."

Getting There Is the Trick: A Focus on Diversity Points the Way

"Nothing will ever be perfectly universally designed," Dr. Burgstahler declares. "I regard universal design as more of a process than a product." The final product, she notes, "is the vision, perfectly designed. Getting there is the trick, however."

What fascinates her is the thought process employed from design inception to completion. "You choose your application, and there are different levels where you apply it to universal design." Take UDI, she explains. "First you decide what it is you are trying to universally design. Say you have a certain class you're teaching. Then the average K-12 or postsecondary instructor would develop her own instructional method for teaching the content that she's decided upon." The instructor usually designs it, Dr. Burgstahler points out, with the class's average student in mind.

According to Dr. Burgstahler, there is a better way. "From the outset, instead of thinking about the average student user, try to look at how you might design for the most diverse group of users." That means, she adds, "that a teacher needs to change her mindset to encompass the diversity of characteristics of a group of people."

Next, Dr. Burgstahler continues, "If I am designing a class based on universal design, and thinking of the diversity of the group, I'm thinking initially of different approaches I might take with any of my material, online or otherwise, that would reach people with a lot of different characteristics."

The Universally Designed Lecture: Using the Senses

The seeds of her approach were planted years before, in her middle school math class, in which she incorporated the advice of her college professor. "He said, 'Whenever you're teaching a math concept, teach it three different ways using three different senses.'"

Here is how her thought process works: "When I teach a concept, I'm thinking about how I can speak it, how I can put it on a worksheet, how I can design a discussion around the topic so the class can better understand it, how I might ask a multiple choice question about it, and also, what kind of an essay question might be

appropriate to make sure the class understands."

Then, she adds, "Once you have this idea of the different approaches you want to take, you apply universal design in each and every instance." For example, "I'm going to give a lecture. There are those who say lectures are not universally designed. My response to them is that that assumption is absolutely untrue. There are universally designed lectures, and there non-universally designed lectures."

In creating a universally designed lecture, she explains, some of her considerations include the following: "What if there are students who cannot see my PowerPoint, or have difficulty processing the printed word because of a learning disability due to English not being their first language or because they are unable to hear?"

As an instructor, she notes, "I make sure to speak all the content on that PowerPoint. I do that by talking straight to the course, by looking at the audience, and by addressing the hearing issues of hearing-impaired students because they would be able to read my lips. Even if they're not deaf, it contributes to their understanding if they can see what I'm saying."

When she was a classroom teacher "I liked to have an outline, or class notes, so that students could take notes on my outline, which would be similar to the PowerPoint and would help pull students through the material and would create scaffolding opportunities enabling them to see both the big and little picture."

All these approaches, she declares, "can be called good teaching or they could be lumped under the heading of Universal Design of Instruction."

The level of knowledge that a teacher must acquire in order to understand and implement UDI, and the intensity of preparation for classwork, plus the

considerations that must be layered onto their normal teaching approach, can be daunting, Dr. Burgstahler concedes. Getting past these obstacles is a challenge for teachers but is one that can be surmounted. "Really good teachers who have good training already do much of this."

The idea, she says, is for teachers to instinctively and automatically employ universal design. "I remember when I was teaching math, if I came across a new way of teaching integration, in a calculus class, for example, I'd be thinking, 'How can I show the students a specific process, maybe through an abstract proof of it, or can I make a picture of it?' Maybe I'd construct a model or include a model from real life. I'm always thinking, 'How can I show this concept in multiple ways, how can I tie it to their lives?'"

UDI Is Not Widespread -- Yet

UDI is not a widespread practice yet, especially in secondary education, but is becoming more evident in K-12, she observes. "[UDI] usually appears in the form of good teaching practice rather than in the universal design package." The reason, she explains, is that K-12 teachers must obtain instruction on how to teach via curriculum courses – such as teaching methods courses and child development courses -- that reinforce many of the concepts that comprise universal design. Post-secondary instructors, she notes, "tend not to have any instruction in those areas at all. They have training only in their disciplines, not in how to teach."

That gap between K-12 and secondary teachers and their postsecondary counterparts, she points out, will be bridged slowly but surely.

"There are many campus programs that involve teaching and learning centers, which include summer institutes where faculty

members can learn teaching methods. Integrating within environments like that is an important step," she declares.

Despite the obvious advantages of UDL and UDI, no organized national effort to implement it yet exists, an irony, she says, considering that so many universal design activities are university-based and national in scope.

Resistance, she asserts, is passive, not aggressive, on the part of postsecondary instructors who are mainly unaware of alternative teaching methods.

On her campus, the University of Washington, reaction to incorporation of UDI teaching concepts would be mixed. Professors, she observes, "don't have a foundation for it. It's very difficult for them to integrate it without special instruction." The most significant obstacle to its postsecondary acceptance, she emphasizes, is lack of awareness. Postsecondary instructors, she says, are largely unaware of "the body of knowledge that has to do with teaching, which is separate from knowing how to teach and knowing the content area."

To her, UDI and teacher training are a hard sell in postsecondary education, "although we see more and more campuses that have teaching and learning centers." Technology is pushing postsecondary teacher training along, she insists. "As soon as technology is in the classroom there is an opportunity for faculty members to get training of some sort on why and how to use it in their classrooms."

If she were administering postsecondary teacher training, she declares, "I'd certainly introduce universal design for instruction and best practices for teaching. I'd keep it simple so no one is chased away. There are some strategies that have emerged through the years that overlap with universal design."

How Will They Cope?

Increasing numbers of students are entering college who have been aided by UDL and AT throughout their K-12 experience. On college campuses, however, these students, many with physical and learning disabilities, are confronted with a learning/teaching environment in which there is none of the first and perhaps too little of the second and third. How will these students cope?

In K-12, says Dr. Burgstahler, "not only is the teaching different from postsecondary, the laws differ as well." In K-12, she explains, "We are obligated to provide education for all of our children, regardless of their ability, in a setting that is as inclusive as possible."

In K-12, she adds, "We've come to accept that there will be kids in the classroom who will be on a special ed track. It comes as a shock to some of these students who have learning disabilities who had been exposed to universal design of instruction and extensive AT availability to go into a postsecondary classroom and have to fend without either."

Their first jolt, she says, is when college authorities don't seek students with disabilities out to provide them accommodations. Postsecondary students must seek out accommodations on their own, Dr. Burgstahler says, "and they often must advocate for themselves with professors. That's a pretty tough thing to ask a 17-year-old or 18-year-old kid to do."

As a consequence, she explains, many of these students fall through the cracks between K-12 and postsecondary education. "When they show up in a lecture with 150-300 students, of course they feel swamped. Kids with learning disabilities who have had good experiences with teachers who accommodated them can be in for a very big shock."

Even if these students approach a faculty member with a letter from the Disability Services for Students (DSS) office, "there's some reluctance among faculty members to make the appropriate accommodations."

Surveys and observations of faculty members, she claims, demonstrate to her that students with learning disabilities are a major concern among college instructors. "There are faculties at big research institutions, including mine, who believe that students with learning disabilities don't belong there; they belong in community colleges instead."

Why Put Them Through the Torture?

Dr. Burgstahler does not condemn her colleagues and others like them nationwide who share their views on students with disabilities yet who are unaware of teaching methods, like UDI, that might help them succeed in college.

"These are well-meaning people who say, 'We shouldn't put these students through this torture when they cannot possibly succeed.' Usually, however, "these well-meaning individuals don't know what a learning disability is. Too many continue to equate learning disabilities with mental retardation."

She combats these now antiquated assumptions by telling faculty that "an individual cannot have a learning disability if that person has below-average intelligence."

What she most objects, she declares, is when faculty members say, "They don't belong in my class." She asks them, "How many decisions have you made about who is qualified to be in your class?" "They look at me confused and then respond, 'Why, none. These kids just show up in the admissions office.'" She then retorts, "It's not your call in this case either. Someone else made the decision about whether the

student has the capability to be in your class." She then adds, "Your responsibility is not to make sure that that student succeeds. Your job is to provide the needed accommodations in cooperation with the DSS office so that the student can have an opportunity to succeed, just like any other student."

Grudging Acquiescence

The result, she notes, is grudging acquiescence coupled with a sense of relief. "I remember a physics professor to whom I was giving some training who said during one of my presentations, 'I don't think these kids belong on our campus; we're a research institution.' I said, 'It sounds like you've had a negative experience.' He told me about a student in his class who had a learning disability. The professor agreed to meet with the student once a week to provide special instruction. Ultimately, the student failed. Innocently, I asked, 'Have any other students failed that class?' Of course, the audience erupted in laughter because this professor's class was notorious as a flunk-out class. I said to the professor, "That's a great story you told, because you gave that student an opportunity to succeed in your class and he failed, just like a lot of students. Maybe physics wasn't an area for this student to pursue. But if you hadn't given him that support and those accommodations, you never would have known."

"I've been a professor. I always felt bad when students with disabilities failed my class. Many came in for extra help, or they had a tutor – and they failed. That made me feel bad, but it's part of the job. I told that professor exactly that. I think I won him over. I told him that the job of an instructor is to create a level playing field, not to ensure success, whereas in K-12 a teacher needs to ensure success. As a K-12 teacher of children with learning disabilities, my job is to create the appropriate learning environment for that child."

Kids with Learning Disabilities Are Left Out

The Pressure of No Child Left Behind

No Child Left Behind exerts enormous pressure on every facet of the K-12 educational structure, Dr. Burgstahler acknowledges. Incorporating universal design of instruction requires effort, careful consideration -- and money. How difficult is it to incorporate the educational aspects of universal design into an environment that is fraught with worry and uncertainty?

Dr. Burgstahler replies, "The question ought to be, who of our students with learning disabilities should be expected to pass state tests with accommodation and which students need to be tested by alternative means?"

"The question I have about NCLB and high stakes testing is, how can we not include students with disabilities because we're afraid our scores will go down? A really good teacher can say, 'I don't want to take these kids with learning disabilities anymore because I'm afraid my scores will go down.' For the wrong reasons, people are moving in a direction that will ultimately be a disservice to our kids with disabilities. The question remains, who should be tested with just an accommodation, maybe a computing device, and who really needs a different test? There'll be a push from parents, teachers and administrators to have as many kids as possible with disabilities not take standardized tests. That's very unfortunate."

She admits that she has no hard evidence of such a trend, "just a feeling I get from asking questions, listening to the answers and observing." Parents of children with special needs, she comments, "are worried about their child passing, so they become part of the push to have those children uninvited from regular standardized testing."

Universally designed instruction, she says, provides only a partial solution to the growing problem. "I think people have a new attitude: They believe that if they have a fully inclusive classroom that is enough. That's fine, but without a UDL or UDI component, that is not yet enough." Unfortunately, she concedes, "I think we're a long way" from universal acceptance of educational universal design as a necessary classroom ingredient.

She adds, "When it comes to computer equipment -- AT -- we're still in the era of just buying AT as a solution, but we're not yet committed to the universal design approach." She comments, "Let's say a student is blind and using text-to-speech technology. Unfortunately, most education is not available to someone using text-to-speech technology. The universal design part of the technology is not yet current. Most schools are still focused on AT only as a stopgap solution, if they can even get the equipment."

Children with learning disabilities, she observes, are left out most often. "This is the largest disabilities group -- and the fastest growing -- in K-12 and postsecondary, but school districts don't even think of technology when it comes to this group, because their disabilities are not visible."

By the time students with learning disabilities are in 9th or 10th grade, she says, "it is clear that they will not be readers without technology as a compensatory tool. Unfortunately, I don't see much recognition of that for children with learning disabilities -- physical disabilities, yes, but not learning disabilities."

As part of universal design, she comments, a computer would read content to the student. If, as a teacher, she comments,

“you’re working with a child who is not a good reader but who is clearly intelligent, then you need to find ways to help that child compensate. What are those students going to do when they go to college if they don’t have the AT to help them as part of a universal design approach? Bring mom along to read to them?”

Schools are reluctant to use AT as a compensatory tool, she says, because schools fear that the learning disabled student will no longer practice reading.

Make the Disability a Positive

If a child has learning disabilities, that child will never be a good reader, Dr. Burgstahler declares. “So how do you make the child a good reader by the time young adulthood arrives? Accommodations via technology help.” Another approach is to evaluate a student’s proficiencies and deficiencies and help that student make decisions about his or her life based on those evaluations. The objective, she adds, “is to make the disability a positive, if possible, and minimize its negative effect.”

Despite its still spotty acceptance, Dr. Burgstahler is hopeful about the future of educational universal design.

“I have great hopes, because so many people are taking an interest in it that it shocks me. It’s brought up in conferences all the time. It was just a few years ago that no one talked about universal design. I had only referred to it in the context of web design applications.”

She has written several articles about designing web pages and using universal design as a concept on which to base the specifics of web accessibility. “You have the same problem [with web design accessibility] as well. You never find a web page that is perfectly web accessible for everyone. There are things you can do to improve – and the federal government has

standards that can aid web designers. I think we need to help teachers to understand the basic concept and to provide them with some basic guidelines about what it means, just like with web page designers.”

For universal design adherents, she says “we can piggyback on other diversity efforts, particularly for women and racial and ethnic minorities. It can be a way to include people with disabilities in a broader concept. I love, for instance, to get people with disabilities on the diversity lists.”

Regarding disability as a diversity issue, she says, “changes the discussion, and I want that. We had some resistance on our campus – not anymore, incidentally – about having disability categorized as a diversity issue. Diversity issues used to include just women and racial and ethnic minorities, but inclusion of disabilities is quite well accepted on campus now.”

She looks forward to the day when “an art professor will welcome a blind professor to an art class in order to get a better perspective on what art means to someone who’s blind. We learn more about ourselves and our subject when we look at that subject in diverse ways.”

Include Universal Design in All Teacher Education Programs

When asked, hypothetically, how she would make educational universal design truly universal if she had the power to do so, Dr. Burgstahler replies, “It should be included in all teacher education programs. I’d also work with special education teachers to help them see the value of universal design. They are very aware of disabilities, of course, but they often do not work on the environment and making that environment accessible. I would tie the Individualized Education Plan (IEP) process to the universal design of the school so the school can get beyond merely fitting this child into

an accessible environment. The school would have to address in the IEP how we can better make the environment accessible to the student."

IEPs, she emphasized, "don't work at cross-purposes with universal design but they don't yet support it. They support accommodation and AT."

In postsecondary education, she continues, "I'd tie in with faculty training efforts.... In fact, I'd like to see some faculty members go through training in good teaching practices. That training would, of course, include universal design."

She would also work with the producers of educational software and other classroom teacher materials and require that they, too, employ universal design. "I was talking to a company recently that is well-known in our field and that company is laying off employees and is going out of business. The trouble is, universal design doesn't sell."

In the procurement process in K-12 and postsecondary "we need to at least ask the vendor to address some accessibility questions. We can't require it unless vendors are willing to employ it because we would not be able to purchase anything." Imagine, she adds, "if every K-12 and postsecondary employment officer nationwide would ask the vendor before a purchase is made, 'How accessible is this product?'" The follow-up question, she says, would be: "Unless this product is fully accessible, what are your company's plans for making this product fully accessible in the next version?" These questions, she adds, "would be prefaced with boilerplate language that states, 'Our school district desires that universal/accessible design be considered in all the products we purchase.'"

Companies, she declares, need to be on alert that school districts and teachers are considering universal design when

purchases are made. "That hasn't happened much at all."

As Universal as AT

"I think we've achieved a level of acceptability and universality with AT today that we need to achieve with universal design." It wasn't too many years ago, she points out, "that just a handful of teachers, professionals and families were paying attention to AT. Twenty years ago, when I was dabbling in AT, all the available AT was designed by engineers whose kids or spouse had a disability." These products, she recalls, "were made in a garage and without user manuals. Now you can go to conferences like Closing the Gap or CSUN and there is a huge number of AT products that provide access to computers."

The problem now is being able to choose the best one for your child out of so many options. Today, she says, AT has achieved a general awareness. "Teachers, administrators and families see its value and feel that it ought to be included in an IEP. In just 20 years, that is huge progress."

But now we need to think about universal design in the same vein and that is the next logical step in this evolution. We need to make sure that universal design is compatible with existing AT and that it be compatible with and included in IEPs. That's what we're pushing for."

Looking Ahead 20 Years

Looking ahead 20 years seems an impossible task, she says, especially when she considers the distance she and universal design have traveled, and how much they have evolved, since the death of her husband nudged her into the field that would become her life's work.

"When microcomputers came along, I said, 'Wow, these things could be used by

individuals with disabilities, even quadriplegics. You can adapt these devices so that people who can't use their hands can use this equipment."

For a number of years, she "dabbled" in adapting computers for individuals who were unable to use their hands. "I worked early on with Greg Vanderheiden at the University of Wisconsin's Trace Center. Only a handful of individuals were experimenting with these devices back then. I wasn't an engineer. I was a teacher/educator. For me, this interest brought together my disciplines: I was a math and computer science teacher, plus my own personal experience with disabilities. It made me aware of the problem enough to see a solution in terms of microcomputers.

When I came to the University of Washington, it was a mainstream computing organization. I was in charge of many of the school's consulting services and made it my business to garner computer support for students, faculty and staff with disabilities who needed access to computers. That was more than 20 years ago. Think of how far we've come since then. Think of how far universal design will have gone in the next 20 years. It's very, very exciting."



RESOURCES

Articles

Universal Design of Instruction

By Sheryl Burgstahler, Ph.D.

Wisconsin Assistive Technology Initiative (WATI) 2004

A recognized national authority on UDL and/or Universal Design of Instruction, Dr.

Burgstahler cites UDL as an effective teaching tool for students whose learning styles are primarily visual or auditory learners with the following disabilities:

- Blindness
- Low vision
- Hearing impairments
- Mobility impairments
- Learning disabilities
- Health impairments
- Psychiatric/mental health impairments

In increasing numbers, she writes, students with these and other disabilities are pursuing postsecondary education. In order to proceed toward that goal, these students, from diverse racial and ethnic backgrounds, including many for whom English is a second language, require a learning system geared to their needs. UDL, she asserts, is that system.

When designing classroom instruction or a distance learning class, she writes, "Strive to create a learning environment that allows all students, including a person who happens to have a characteristic that is termed 'disability,' to access the content of the course and fully participate in class activities.

She cautions that employing universal design principles in instruction does not eliminate the need for specific accommodations for students with disabilities. "There will always be the need for some specific accommodations, such as sign language interpreters for students who are deaf. However, applying universal design concepts in course planning will assure full access to the content for most students and minimize the need for specific accommodations."

This resource is available at:

<http://www.washington.edu/doit/Faculty/Strategies/Universal/>

A Key for Successful Curriculum Access

By Penny Reed

Wisconsin AT Initiative (WATI) 2004

Ms. Reed describes what UDL is and what it is not. UDL, she writes, “is the design of instructional materials and activities that allow the learning goals to be achievable by children with broad differences in their abilities to see, hear, speak, move, read, write, understand English, attend to information, organize, engage, and remember.” UDL, she adds, is achieved by means of flexible curricular materials and activities that provide access and alternative ways to participate for students with differences in abilities and backgrounds. These alternatives are built into the design of the materials, equipment, instruction, and activities-not added afterwards.

Universal Design does *not* mean that the instructional materials and activities accommodate students by lowering the standards. Universal design, she writes, “is not ‘dumbing down’ the curriculum. It does not mean that the range of curriculum activity must be narrowed or that teachers find the least common denominator that appeals to the broadest number of students.” In fact, she adds, “universal design in learning means more flexibility and a wider range of activities rather than uniformity of any kind.”

UDL, she concludes, “is now possible because of the computer technology that is available in schools. It is the direction we need to go in order to take advantage of the capabilities of this technology.”

This resource is available at:

<http://www.wati.org/bestpractices/univdesign.html>

Universal Design for Learning

By Linda Robinson

The Center for Best Practices in Early Childhood

Western Illinois University 2001

To Ms. Robinson, UDL is comprised of three key principles, which she outlines.

The first principle of UDL, Ms. Robinson writes, “is to provide multiple representations of content.” Children learn in different ways, she continues, “some are better with visual materials, others do best with auditory. In some cases it is a preference, while in others it is a necessity. If content is presented through a variety of media, all learners benefit. The computer is a particularly good tool for presenting information in multiple media. Both the capabilities of the computer through system software and the addition of adaptive peripherals make it possible to customize learning for an individual.”

The second principle of UDL, according to Ms. Robinson, is to provide multiple options for expression and control. “The computer and adaptive devices can be used to meet this principle.” Typically, she writes, “students are required to demonstrate their knowledge through text on a printed page. However through the use of technology, they have a variety of means for expression and communication. Students can add artwork, photographs, music, and video to their written text to better convey ideas. For those who are unable to use traditional writing and drawing tools, the computer provides an adaptable environment for expression.” Educators, she emphasizes, “need to rethink composition assignments and consider all forms of expression which best suit the learner.”

Thirdly, she concludes, “Educators must provide multiple options for engagement, which may be the most difficult factor to consider in instructional design. Keeping

children interested and motivated to learn can be challenging. Again, technology offers many diverse possibilities for both the teacher and the learner. Software may provide feedback and opportunities for exploration that keep children interested in learning." To meet this third universal design principle, "Teachers must have a curriculum that includes activities and materials which can be adjusted to the learner skill level, interest, and preferences. By integrating technology into the curriculum educators will be able to meet the requirements of universal design."

This resource is available at:
<http://www.wiu.edu/thecenter/articles/univdes.html>

Universal Design: A Strategy to Support Students' Access to the General Education Curriculum

By Christine D. Bremer, Ann T. Clapper, Chuck Hitchcock, Tracey Hall, and Mera Kachgal
National Center on Secondary Education and Transition (NCSET) December 2002

The authors, in their abstract, write, "The concept of Universal Design promises to improve outcomes for all students, including those with disabilities. Some aspects of Universal Design can be implemented at the local level; others will require the cooperation and commitment of manufacturers, publishers, and others. By changing the focus from remediation of individual disabilities to expansion of the usability of classrooms and curricula, benefits will be realized by students, teachers, and schools."

The Individuals with Disabilities Education Act (IDEA), they conclude, has expanded its focus to include educational access to the general education curriculum. "This has posed significant challenges to general and special educators in terms of

designing curricula that accommodate students' diverse learning needs and styles."

This resource is available at:
<http://www.ncset.org/publications/viewdesc.asp?id=707>

Applying Universal Design to College Instruction

By S. Scott, S. Shaw, J. McGuire
Center on Postsecondary Education and Disability
University of Connecticut 2001

The authors apply the classic principles of universal design, as developed by the Center for Universal Design at North Carolina State University, to college instruction. The authors included students in secondary and postsecondary educational environments in their investigation "because these students, by definition, represent a broad range of learning and cognitive differences that often challenge traditional notions of college instruction." They concluded, "We found the principles of UD to be quite encompassing as a framework for inclusive college instruction."

The authors adapted the North Carolina State University Universal Design Principles to formulate their own nine principles for Universal Design of Instruction. These are:

- 1.) ***Equitable Use***. Instruction is designed to be useful and accessible for people with diverse abilities. Provide the same means of use for all students; identical whenever possible, equivalent when not.
- 2.) ***Flexibility in Use***. Instruction is designed to accommodate a wide range of individual abilities. Provide choice in methods of use.
- 3.) ***Simple and Intuitive***. Instruction is designed in a straightforward and predictable manner, regardless of the student's experience, knowledge, language skills, or

current concentration level.
Eliminate unnecessary complexity.

- 4.) **Perceptible Information.** Instruction is designed so that necessary information is communicated effectively to the student, regardless of ambient conditions or the student's sensory abilities.
- 5.) **Tolerance for Error.** Instruction anticipates variation in individual student learning pace and prerequisite skills.
- 6.) **Low Physical Effort.** Instruction is designed to minimize nonessential physical effort in order to allow maximum attention to learning. This principle does not apply when physical effort is integral to essential requirements of a course.
- 7.) **Size and Space for Approach and Use.** Instruction is designed for appropriate size and space for approach, reach manipulations and use regardless of a student's body size, posture, mobility and communication needs.
- 8.) **A community of Learners.** The instructional environment promotes interaction and communication among students and between students and faculty.
- 9.) **Instructional Climate.** Instruction is designed to be welcoming and inclusive. High expectations are espoused for all students.

This resource is available at:
http://www.facultyware.uconn.edu/files/UDI_principles.pdf

Universal Design for Instruction: The Paradigm, Its Principles and Products for Enhancing Instructional Access

By Joan M. McGuire, Ph.D., Sally S. Scott, Ph.D., Stan F. Shaw, Ed.D.
Journal on Postsecondary Education and Disability

Association on Higher Education and Disability, Fall 2003
Center on Postsecondary Education and Disability
University of Connecticut 2002

The authors, all members of the faculty of the University of Connecticut's Center for Postsecondary Education and Disability, discuss the Nine Principles of Universal Design for Instruction (UDI) they developed in 2001, to apply to college instruction for students with disabilities. The authors cite the dramatic four-fold increase in the number of college students with disabilities since the American Council on Education began tracking that statistic in 1978. Write the authors, "The majority of these students have non-visible disabilities (e.g., learning disabilities, ADHD, psychiatric disorders) that often affect cognitive processes. In addition, college enrollments include increasing numbers of international students, individuals from under represented groups, and students whose first language is not English."

As higher education acknowledges the educational value of diversity on college campuses, the authors urge college faculty members to address the implications of student diversity in the design and delivery of instruction.

Traditionally, they add, the primary means to ensure equal access to instruction for college students with disabilities has been to provide modifications and accommodations such as those mandated by federal law. Although modifications and accommodations are often a necessary and appropriate means to provide access, the authors assert, they "are based on a philosophy of retrofitted changes designed to level the playing field.

Based on the intriguing notion of applying UD to college instruction, the Center, where the authors are faculty members, has been systematically exploring and developing Universal Design for Instruction "to

anticipate diverse learning needs in college classrooms and to incorporate effective instructional strategies to make learning more accessible to students with disabilities.”

This resource is available at:

http://www.ahead.org/members/jped/articles/Volume17/17_1/jped171mcguireuniversity.ersal.doc

Beyond Access: Universal Design for Learning

By Ann Meyer, Ed.D. and Lucinda M. O’Neill
Psy-Ed Corp.

The subject of this article, Universal Design for Learning (UDL), is advanced as a basic concept of education applicable to every learner. While the term universal design has come to describe planning and providing for physical access by those with disabilities, it is enlarged here to encompass all phases of learning and can be applied to all learners.

Founded on the basic premise that each student, with or without a disability, is unique, the idea of applying UDL to all phases of educational endeavors follows easily. Ultimately, instead of “fixing” students so that they can manage a set curriculum, UDL “fixes” the curriculum by making it adjustable.

The concept further includes the idea of flexibility in learning materials and the use of this flexibility by teachers, especially in the area of digital media and tools. UDL makes use of assistive technologies, which can enhance learning under many different conditions.

This resource is available at:

<http://www.eparent.com/technology/cast1.htm>

Fast Facts for Faculty: Universal Design for Learning; Elements of Good Teaching

The Ohio State University, 2004

The article discusses ways in which faculty can structure course presentations according to UDL principles. Derived from the Principles of Universal Design drawn up by researchers at the School of Design, North Carolina State University, the UDL principles include the following:

- Identify the essential course content
- Clearly express the essential content and any feedback given to the student.
- Integrate natural supports for learning (i.e. using resources already found in the environment such as study buddy)
- Use a variety of instructional methods when presenting material
- Allow for multiple methods of demonstrating understanding of essential course content
- Use technology to increase accessibility
- Invite students to meet/contact the course instructor with any questions/concerns

The discussion of UDL’s “essential qualities” includes the points discussed in other resources. Illustrations of each are presented, for example:

“Universally designed course content allows for alternate methods of expression. This allows the student multiple means of demonstrating mastery of the material. Example: Allowing the students to demonstrate knowledge on a subject by doing an oral presentation or writing a paper or taking a test. Students with a speech impediment may be unable to present the information orally while students with a fine motor disability may have difficulty taking a written exam.”

UDL implementation recommendations include:

- Put course content online, allowing students to retrieve material that might have been missed in lecture
- Use peer mentoring, group discussions and cooperative learning situations rather than strictly lecture
- Use guided notes to enable students to listen for essential concepts without copying notes from an overhead projection
- Update course materials based on current events and student demands
- Provide a comprehensive syllabus with clearly identified course requirements, accommodation statement and due dates
- Fluctuate instructional methods and provide illustrations, handouts, auditory and visual aids
- Clarify any feedback or instructions, ask for questions, and repeat or give additional examples
- Relate a new topic to one already learned or a real-life example
- Allow a student to tape record lectures or provide him/her with a copy of your notes
- Allow the student to demonstrate knowledge of the subject through alternate means
- Permit and encourage the use of adaptive technology
- Develop study guides
- Give more frequent exams that are shorter in length

This resource is available at:
<http://telr.osu.edu/dpg/fastfact/undesign.html>

Resource Guides & Handbooks

Universal Design for Learning

Assistive Technology Online Training Project
U.S. Dept. of Education, Office of Special Education and Rehabilitation Services 2002

This resource guide focuses on UDL principles in a discussion supported by usage statistics and common-sense reasoning. Using examples of popular technology for the classroom, the guide presents a strong case for integrating accessible technology and creative tools into everyday learning.

The guide lists resources that allow educators to evaluate and prepare their classrooms for diverse teaching aids, while advocating for universal design technologies as part of a Free and Appropriate Public Education (FAPE) for all of their students. This resource provides no-frills information that offers several tiers of examples, data, and planning assistance.

The guide is available at:

<http://www.atto.buffalo.edu/registered/ATBasics/Populations/Udesign/printmodule.php>

Universal Design for Individual Differences

Center for Applied Special Technology (CAST) 2002

This CAST-produced handbook discusses three brain systems -- recognition, strategic and affective - - and their impact on individual learning.

No two students learn the same way, the handbook text claims. "Even within the normal range of performance and ability, students vary greatly in their ability to see, hear, move, read, write, attend, organize, focus, engage and remember."

"Applying universal design for learning materials and activities can increase access for all learners, including those with disabilities," the handbook states. For example, the author points out, "History texts provided in standard print format

present a barrier for students who are dyslexic or to students for whom English is a second language, and is completely inaccessible for blind students." The same material in a universally designed digital format, it adds, can offer many options for these diverse learners. "The material can be read aloud by a computer or screen reader, printed on a Braille printer, offered in spoken or written translation, and/or presented with highlighted main points and organizational supports."

The text concludes, "Teachers practicing universal design for learning find themselves questioning the way in which they conceptualize and articulate assignments. Is the goal to write a story, or to create a narrative? Is the instruction to write your name at the top of the paper or to identify your work? As in other applications of universal design, well executed universal design for learning engenders constructive re-evaluation and reformulation that ultimately benefits all learners."

This resource is available at:
<http://www.cast.org/udl/UniversalDesignforIndividualDifferences1363.cfm>

Training Modules

Universal Design

Assistive Technology Online Training Project
University of Buffalo Center for Assistive
Technology 2000

This training module, available online, was developed by the University of Buffalo Center for Assistive Technology. The ATTO Universal Design module discusses the importance of teachers varying the ways they deliver homework, make assignments and test students' comprehension.

Educational technologies that have UDL built in will "allow all students to succeed."

The training module provides the reader with web resources for general UDL information, as well as provides statistics on the prevalence of use of technology in the classroom.

The training module is divided into sections that discuss ways to display information, amplify sound, and modify video (captioning and describing). The module also provides information about electronic learning tools, reference materials, computers, concept mapping, personal digital assistants and personal digital assistant (PDA) note takers.

This resource is available at:
<http://www.atto.buffalo.edu/registered/ATBasics/Populations/Udesign/index.php>

Books

Teaching Every Student in the Digital Age: Universal Design for Learning

By David H. Rose and Anne Meyer
Center for Applied Special Technology
(CAST), 2002

The result of 15 years of research and development conducted by CAST and collaborating individuals, schools, districts and states, the book is divided into two sections: the first addresses the UDL concept; the second discusses classroom applications of UDL. Each chapter opens with a summary of key ideas and a graphic organizer that illustrates how the concepts fit together. Each of the book's eight chapters provides links to additional UDL resources.

This resource is available at:
<http://www.cast.org/teachingeverystudent/ideas/tes/>

Websites

Teaching Every Student

CAST

This section of the CAST website supports educators in learning about and practicing UDL. The site features the following highlights:

- *Ideas and Information*, which includes publications, presentations, case histories and other online UDL resources
- *Tools and Activities*, web-based and downloadable tutorials, tools, templates and activities to help you put the ideas of UDL into practice
- *Community and Support*, opportunities to collaborate, communicate, and obtain support from other educators exploring and teaching with UDL
- *UDL Toolkits*, which show how UDL principles can be applied in classrooms with model lessons, interactive activities, tools, and curriculum resources

This resource is available at:

<http://www.cast.org/TeachingEveryStudent/>

National Consortium on Universal Design for Learning

The Consortium is a partnership of general and special educators, schools, and experts who are committed to improving educational outcomes for ALL students, including those with disabilities, through the application of UDL to classroom practice.

The Consortium fosters shared responsibility and accountability for the education of all children in the general education classroom through the collective expertise of its members, and activities that include research,

professional development, demonstration of promising educational practices, and collaboration with experts.

This resource is available at:

<http://www.cast.org/udl/index.cfm?i=359>

Fact Sheets

Universal Design for Instruction Fact Sheet

This fact sheet prepared for the University of Connecticut faculty by that university's Center for Post Secondary Education and Disability features explanations of UDL concepts, definitions of UDL terms and ways for college professors to incorporate Universal Design principles and concepts into their instruction.

This resource is available at:

http://www.facultyware.uconn.edu/files/udi2_fact_sheet.pdf



KNOWLEDGE NETWORK MEMBERS

The Center for Leadership in Education: Universal Design for Learning in Ohio

The center's overall objective is to integrate Universal Design for Learning (UDL) into school systems throughout Ohio. The center identifies and trains school-based UDL teams consisting of at least three general education teachers, one special education teacher, one technology specialist, a building level administrator and

a curriculum specialist. Currently the center staff is working with 16 teams throughout the state.

The center aims to serve as a key regional location for activities of the National Consortium on Universal Design for Learning. Center programs are bolstered by a grant from the Nord Family Foundation to the Center for Applied Special Technology (CAST).

Tricia Bowersox, UDL consultant says: "What our teams keep in the forefront is that UDL helps all students access their highest potential. UDL is a framework for designing instruction that meets the needs of all students, across the full spectrum of learners."

For more information, contact:

The Center for Leadership in Education
201 Burns Road
Elyria, OH 44035
Phone: (440) 366-4880
Fax: (440) 366-4881
Contact: Linda Conry, UDL Coordinator
lconry@centernet.org
<http://www.centernet.org/udlneohio.htm>



Technology Resources for Education (TRE) Center

The center, which specializes in UDL and AT education, is the New York State Department of Education's designated assistive technology resource and training center for students, parents, educators, therapists, agencies and all New York residents with disabilities. The facility mainly services grades K-12. TRE's services include: AT loans, information and referral, newsletters, a previewing center, student technology consultation, and training.

A range of UDL-related links to web-based resources is provided on the center's website. Also included is an annotated bibliography of relevant articles.

For further information on the TRE Center, contact:

Technology Resources for Education (TRE) Center
Maywood School
1979 Central Avenue
Albany, NY 12205
Phone: (800) 248-9873; (518) 464-6436
Fax: (518) 464-5363
<http://TREcenter.org>

Kentucky's Universal Design for Learning Initiative: Instructional Technology for Student Success (ITSS)



ITSS is a statewide initiative to evaluate and identify key UDL-related strategies. The ITSS program examines the systemic and classroom issues associated with improved access to the general curriculum by students with disabilities. Since the program's beginnings in 2000, participating schools have been selected from each of the state's eight regions and include elementary, middle and high schools, plus the Kentucky School for the Deaf and the Kentucky School for the Blind.

Teachers have entered ITSS with computer skills ranging from novice to proficient. Teacher training includes basic UDL concepts, including use of text-to-speech or text reader and screen reader software and the use of a scanner with optical character recognition (OCR).

Implementation of UDL includes providing access to curriculum through availability of electronic textbooks in a format accessible to text and screen readers. Since most textbooks are currently unavailable from the publishers in an accessible format, it is necessary to convert the print version through a process of scanning and OCR. Copying copyrighted material is allowed under certain conditions. The ITSS website helps coordinate and connect teachers in need of textbook materials so the scanning process can be a shared task, diminishing the time teachers spend scanning materials.

The Kentucky Department of Education (KDE) is developing a policy requiring publisher provision of accessible digital text for use by students with disabilities. Standards will be set for format and accessibility issues. There are already many texts available in the public domain. Literature that has gone out of copyright or historical documents is available for download or reading in HTML through a variety of sources.

Students who regularly use the computer to read text that is above their independent reading level may be eligible to use a text/screen reader as an accommodation on Kentucky's statewide assessment, the Kentucky Core Content Test (KCCT). To qualify for this accommodation, three criteria must be met:

- Students must have a documented disability which justifies the use of this technology as an accommodation (i.e. reading, sensory, or physical disability)
- Need for the technology must be in a student's IEP
- Students must use the technology as a regular part of classroom instruction.

For more information on ITSS, contact:

Instructional Technology for Student Success
Kentucky's Dept of Education
Division of Curriculum
Development/Learning Strategies Branch
Phone: (502) 564-7168
Fax: (502) 564-6470
Contact: Linnie Calland, UDL Project Coordinator
lcalland@kde.state.ky.us
<http://kysig.louisville.edu/udl/>

Louisiana Center for Educational Technology (LCET): Universal Design for Learning



LCET offers "Bridging the Gap through Universal Design for Learning" as an institute to aid Louisiana educators in employing UDL.

The professional development goals of the Bridging the Gap institute are:

- Identifying principles of UDL
- Applying UDL strategies to classroom practices
- Using technologies that support UDL in the classroom
- Applying UDL to curriculum planning
- Developing concrete action plans for the continuous integration of UDL principles

Districts interested in developing general curriculum accessibility may participate in "Bridging the Gap" online or in the residential UDL institute. The suggested audience is district and/or school-based teams. Membership of a district team should include: a special education teacher, regular education teacher, curriculum supervisor, special education supervisor and technology supervisor.

School-based teams should include a special education teacher, regular education teacher, administrator and librarian/media specialist or technology specialist.

The face-to-face and online institutes include the same content presented in different formats. The residential component of "Bridging the Gap" provides a hands-on experience highlighting UDL. Participants receive a textbook entitled, *Teaching Every Student through UDL*, explore software with UDL features, interact with other professionals from various schools and districts, review laws and legal parameters of IDEA, Sections 504 and 508 and develop a district or school-wide UDL action plan. The online institute is conducted on an "anytime, anywhere" basis and consists of weekly assignments, posting to the discussion board, and assigned readings. Three six-week online courses are offered throughout the year: September (fall), January (spring), and May (summer).

For additional information on the center's UDL institutes, contact:

Louisiana Center for Educational Technology (LCET)
On the Campus of Louisiana School for the Deaf
2758-D Brightside Drive
Baton Rouge, LA
Phone: (225) 763-5575
Fax: (225) 763-5461
<http://www.doe.state.la.us/lde/lcet/399.html>



Please join us

March 3, 2005

For our Online Discussion on
AT Supports for Young Children

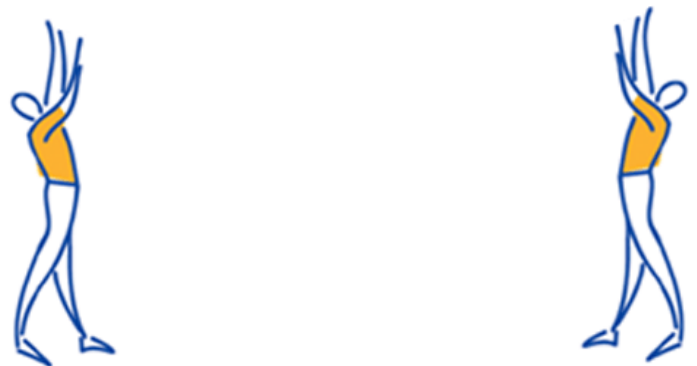
with experts:

Sue Mistrett, with the University at Buffalo Let's Play Project

&

Lisa Larson, who's young son Trey, has been successful with a wide range of assistive technology from low to high tech equipment.

This month's discussion will address the use of assistive technologies for young children with disabilities to support development and promote play in children's lives.



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