

# **Crossing the Great Divide with Networks, Teaching, and Interactivity**

by Bud Gillan, Educator and Consultant



*“If you don’t know where you are going, you’ll probably end up somewhere else.”*  
*Yogi Berra, a great American philosopher*

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## Synopsis:

How do we *really* make a difference in education with technology? After two decades of development, experimentation, and implementation of school technology, the *Age of Accountability* has caught up with the *Information Age*. Our nation watches as education is now playing on center court. How are we going to provide equity in access to technology, opportunities to learn, and meaningful results? Educators recently titled a technology homepage, “All Children Must Be Ready for a Different World”. Researchers say this generation **will learn more** from TV, the Internet, and Instant Messaging than they will from school and home. Imagine that...but some **potent solutions** are emerging from our classrooms. This White Paper: (1) provides analyses of the different types of technology divides, (2) proposes steps for closing these gaps, (3) outlines the need for improved interactivity and new learning environments, and (4) describes the role networks and software must play in crossing the Great Divide.

## Who’s On First.

Who can really measure the impact of **technology** in our day? Let’s just say it is huge...and growing. Who can fix **education** in America? Not me. Who can define today’s average **student**? They are not average, nor studious. Yet **technology, education, and kids** are big-time topics today. There is a lot of talk about our nation at-risk, leaving children behind, and our math and science test scores being in the gutter. Teachers face immense challenges, teaching in a world where authentic learning is pitted against reality TV.



The classroom today, for many reasons, is not for the faint-of-heart. Teachers face a digital generation born in the Information Age, in a dichotomy where wireless laptops co-exist with hungry students. America is a place of dichotomies. These dichotomies come in different forms. Computers have changed how they think, learn, live, and communicate. Young people today, given the chance, use technology every chance they get. Even their ubiquitous cell phones are morphing into visual mobile multimedia centers. Human nature itself is interactive and a great fit for interactive technology. The challenge is to use interactive technology to impact learning.

## Digitally Divided.

The heralded “Digital Divide” is more about learning than anything else... the opportunity to learn **about** technology and learn **with** technology. It is about the **opportunity** to learn and the opportunity to teach. However, the more the term is used, the more the meaning is blurred. **Technology literacy** has joined ‘reading, writing, and arithmetic’ as **basic skills** required for all to know and use. Schools, therefore, should provide access and instruction in this vital area. Many states have already adopted ISTE’s (International Society for Technology in Education

*Young people today, given the chance, use technology every chance they get.*

[www.cnets.iste.org/](http://www.cnets.iste.org/)) new, well-defined **National Educational Technology Standards (NETS)** as part of their state curriculum standards. Not providing meaningful technology opportunities for every student furthers this digital divide, leaving them behind and separated. Crossing this *Great Divide* means leveling the playing field by providing opportunity and preparation for everyone using and understanding technology. Let's review some analysis and current practices before offering solutions.

### **Gap Analysis...Quantitative and Qualitative.**

Our technology gaps and digital divisions exist both quantitatively and qualitatively.

**Quantitative gaps** exist in schools and families where there is simply not enough technology or time-on-technology. Many schools and classrooms lack enough newer networking technology, software applications, and online access for regular instruction and learning purposes. Even in schools with ample technology, the lack of curriculum integration, access to computers, and logistical problems result in very limited student time-on-technology. Learning to use technology in these situations is extremely limited. This type of gap is growing at an alarming rate. The notion is that the school has enough technology so schools should spend their time and money elsewhere. Additionally, lack of teacher training and their own technology literacy is a well-documented problem, but in these limited-use schools, the gap problems are **compounded**.

Clearly, the digital divide is not only about the 'haves and have nots'. Serious **qualitative gaps** exist where students and teachers have enough access to technology, but there are control problems. Even with knowledgeable and technically savvy teachers, students maintain an upper hand in computer-use. So many of today's students know so much about networks and computers, in-school computer use becomes *chaotic*, as one computer teacher called it. Even with content filters, IP address tracking, and altering classroom seating, high-speed T1 and DSL lines are huge temptation for downloading everything under-the-sun. Many students understand more technically than most IT staff. This **loss of control** of computer use is an epidemic that turns many capable teachers away from implementing lessons with technology.



Many of the **control problems** are externally induced and don't exist on the school side of the WAN. There are incredibly large industries of devious dementia pushing content in ways where schools and homes can't help but be affected and infected. On the inside too, there are significant temptations. At a WAN-enabled school where I taught, some eighth graders hacked into the school's administrative server through professionally installed firewalls, just for the fun of it, and then changed a few grades just to prove they were there. These were not "bad" kids, but are like the ones that live next door, or maybe in your own house. Many cyber-researchers say we really don't know all that is going on out there, but we know much of it is not good or healthy, and one way or another this content is showing up in our schools and in our kids' minds. New software technologies will provide teachers with significant assistance in this area as well.

### **Not My Kid.**

At a recent visit to a new high school with brand new computer labs, a teacher printed off one day's findings of inappropriate use. When the principal confronted the students and parents with the evidence, the parents' response was "not my kid". One district that implemented laptops to all high school students found through an audit that 70% had downloaded very inappropriate material. Getting technology into the hands of kids can provide wonderful tools, but requires **real guidance** and **supervision** to reverse these trends and mindset.

This is the **mentality** of this generation of computer users that they can do whatever they want, or whatever they can get away with. This is the environment that teachers face in many schools. Clear causes of this quantitative gap include: (1) the technology skills gap between teachers and students, (2) loss of control of technology in the classroom, and (3) a pervasive mindset among students. Many students now have much better technology at home than are in their schools, and know how to use them. Teaching these students with this same media they embrace is essential. For many of the students who have turned off to school and traditional teaching methods, teaching with technology and new media may be the only way to **teach and reach** them. Having technology does not mean learning and purposeful preparation is going to happen. Much of the evidence is to the contrary.

### **IT and IM.**

We all know the glut of information that technology (IT) provides. This is true for young people as well, just different kinds of information. In many ways teachers face a generation whose minds are full, not empty, minds are full of stuff that gets in the way of real learning. Communicating over computers adds to this challenge, but is deeply entrenched in the culture of young people. But how and why is this happening?

At an accelerated rate real English is being replaced by IM English (Instant Messaging) with its semi-symbolic, abbreviated typo-lingo phonics *du jour*. If you doubt this, read a sampling of answers and essays written by today's students. Even our better learners communicate with this new, diluted hybrid-speak. This creates more challenges for today's teachers and parents who don't speak IM. This is how the majority of this generation communicates, online and as often as possible. So naturally kids coming to schools want to communicate this way. This forms another type of digital divide. It is how they think and live.

One of the tresses of bridging the Great Divide means providing tools (including IM) **for communicating with students**. Diverting and re-purposing computer communications as a means of instruction and inquiry can play an important role in using technology itself in close these gaps. It puts teachers and students on the same wavelengths. It will give teachers access to the minds and thinking of their students. This is particularly true in **networked environments**. Providing these real-time software tools can enable teachers to communicate directly with students.

### **Classroom Crevasses.**

Interest-wise, education is at an all-time high across the nation, yet we stand at new crossroads, ones with digital gaps and potholes. Teaching and technology have reached **the intersection of learning**. Can you imagine growing up today and not learning how to use technology?

*The digital divide is not only about the 'haves and have nots'*

Technology itself must be used in the instruction of this generation. Simply stated, *the digital generation needs digital lessons, content, and instruction*. Teachers need **new digital tools** and networking know-how. Interactivity, learning, and technology can be powerful allies in **our classrooms**, which is where the real battle looms for crossing the divide. Technology is a conduit for teaching this generation.

While this meta-analysis looks at the larger picture of the digital divide, a micro-view looks at the classroom (or lab) and the **crevasses and crevices** that need to be bridged. This is the place where **boredom is the enemy of learning**, and competition for the minds of today's student is a challenge that requires more than cleverly designed textbooks and teach-to-the-test strategies prevalent in too many of today's schools. Traditional instructional methods of books and blackboards needs a significant infusion of new approaches to learning and new content provided by interactive technology. Let's look at the lessons we have learned so far in our use of technology.

### **Lessons Learned.**

For two decades of hardware and software have flooded our schools. Studying what has happened can be very informative in making sure our steps in crossing any digital divides are real and sustainable. The research listed below is summarized into key points, providing an overview of key technology issues facing today's districts, schools, teachers, and education companies. It is interesting to note that many of these points **contributed to the digital divide** in the first place. Not repeating history or widening current technology gaps is a critical point of this White Paper, and is used in formulating steps to solutions in the remainder of the paper:

1. Schools/Districts struggle to keep up with IT support and its growing complexities.
2. School IT and infrastructure planning and implementation need to be enterprise-wide.
3. Curriculum and instruction need to drive technology, not the other way around.
4. Students remain ahead of teachers in understanding and use of IT.
5. Schools continue to buy classroom technology without including training.
6. Training remains the least effective or missing element, despite of acknowledging need.
7. Research of effective models of implementation remains undone or poorly understood.
8. Educational research is largely under utilized or ignored by technology and curriculum companies.
9. School publishers focus technology use on support of their products, not curricular needs.
10. Promise of technology is not actualized because of poorly designed software, lack of curriculum integration, lack of adequate hardware, and lack of teacher expertise.
11. Loss of control in the classroom is the foremost concern and reason teachers give for non-use of technology.

*Access to technology is the first step in closing the digital divide, but only builds the bridges partially across the crevasse.*



### **Leave No Teachers Behind.**

The cartoon above is a perfect parody of today's classroom and the dilemma many teachers see everyday. The new national education Act (Leave No Child Behind) focusing on not leaving any children behind needs to be expanded...*don't leave the teachers behind either.* This means **real technology literacy** for teachers. The more they understand the use of technology as a vehicle of instruction, the more they will be speaking the same language our digital kids speak. Computers with well-designed software in the hands of competent teachers are potent tools for teaching interactively and getting results. **Teachers and teaching** are critical entities for standing in the huge digital gap we face and **part of the schema** for resolving the problem. Otherwise we will perpetuate and widen the gaps, even if new technology is available to all.

### **The Importance of Interactivity.**

Teaching with technology, particularly networked technology that is Internet-enabled, provides more opportunities for **real learning** than any other pedagogical approach or curricula in today's schools. Interactivity is not new. It is part of human nature, part of our fabric and make-up.

**Questioning, observing, and discussing** have always led to thinking, reasoning, and understanding. In fact, they are pre-requisites to the construction of knowledge. Interactive technologies facilitate these processes and provide opportunities for learning in unprecedented ways. This is also the **where and why** the digital divide must be closed. Closing the technology divide in this generation can also lead to closing the **Grand Canyon** of divides, which is human illiteracy in reading and writing. Close to a hundred million Americans are functionally illiterate. The two divides are connected. Solving one, helps solve the other.

Since **Socrates** taught through interactive dialogues that answered questions with more focused questions, people have always learned through interactivity. Improved interactivity and individual learning fits with the most recent brain-based research and instructional models. It also fits with the mentality of this generation of students. William Glasser's *How We Learn*, speaks volumes about the **need for interactivity**, as he summarizes his seminal research on the nature of learning. An explosion on learning and brain-based research is now having an **impact on education**, including the use of technology in education. ASCD and *Education Leadership* magazine provide a useful summary on the topic. From neurosciences to common sense to curriculum developers, education is beginning to benefit from this field of study and technology can provide the interactivity.

[www.ascd.org/readingroom/edlead/abstracts/nov98.html](http://www.ascd.org/readingroom/edlead/abstracts/nov98.html)



### **Where Do We Need to Go.**

Comprehensive solutions to the national situation require simultaneous focus on each of the key components of the problem. Not focusing on the quantity **and** quality issues will cause more of the same. Funding, legislation, grants, entitlements changes, philanthropic endeavors, mobile technologies, community-based programs, and district-level technology decisions and policy changes can all have an impact on the quantity issues. Qualitative issues are more problematic to solve, but steps are possible, including resolving technology control issues, renewing teacher mindsets, providing training, utilizing new networking software, and creating new interactive learning environments. With this **dual** quantitative and qualitative approach, let's review each of these areas in more detail.

### **District Decisions.**

Two recommendations for Districts leveraging monies and planning are purchases of new mobile networks and incorporating enterprise-wide remote technical support. Such IT decisions, when implemented, free-up district dollars for years to come and provide needed monies for hardware, software, and technology training dollars.

**New mobile networks** (mobile laptop computer labs) provide more promise for technology access simply by the increased numbers of students that can use computers in a given day. These labs go from classroom-to-classroom providing **increased time-on-technology**. Purchases in this area, along with appropriate software are a real solution for districts. Laptops themselves are being purchased and loaned to students for periods of time, including use at home. Gap-closing benefits of laptop technology is written about in another white paper "*Don't Let Your COWS be an Utter Disaster*" (see Web References).

District's are beginning to discover ways to save technology dollars by **incorporating enterprise-wide remote support**. Based on a new generation of sophisticated, secure software IT tools, Districts may employ a *don't go there* strategies that enable IT staff to do **anything** from **anywhere** at **anytime**. Expertise in these situations is virtual and on-time. A separate white paper outlining this approach, "*The Changing Formula for IT Support for Schools*" is available which includes TCO and ROI elements as well as IT analysis.

<http://www.crossteccorp.com/support/resources/HuberGillan1.pdf>

### **Control Freaks.**

Most teachers I know are control freaks. And they should be in certain areas. Loss of control in the classroom leads to poor learning environments. Loss of the control of the computers leads to disasters. Teachers need **new thinking** about their **ability** to be able to regain control of classroom technology and the new tools that will do that. **Crossing the technology crevasses** in the classroom requires **a change in mindset** for teachers and students. As

students understand that through software teachers can see what they are doing, they change what they are doing on computers.

Schools are just discovering supervision through software. This is having dramatic effects in the time-on-task and the classroom environment where this type of software is installed. Yet, extensive, nationwide implementation is still needed. **Teachers gaining or regaining control** of technology is a key element, and in many cases **the** element, to closing the technology division between teacher and student. Vast numbers of teachers simply don't use technology or minimally use technology in classes and instruction because of the control issue. Put yourself in their position. Once under control, teachers begin to find both **hope** and the **desire** to use technology regularly. This change in mindset is **essential** and for many teachers requires a huge leap of faith. But it is a leap across the technology crevasse in their classroom.

### **Focusing on Students.**

We should never lose focus on the purpose for these efforts. The end point here is not the teachers or the technology gap, it is **the students**. While regaining control of the classroom technology is the first step, the next step is to establish **student-centered** uses of technology for their learning. Research shows learning happens because instruction **is** interactive, individual, and interesting. Students' expertise in technology and their **powerful drive** for personal use of technology must be **refocused** and re-channeled so that their time-on-technology is "**time-on-task**". The digital divide between teacher and student is one of the most important areas that need to be resolved. Hope for the education of this generation of students in a large way depends on it.

### **New Learning Environments...Interactive, Individual, and Intererstring.**

Creating technology environments that are both teacher-controlled and student-centered, sounds like something straight out of virtual dotcomland, or vaporware, if you will. It is too good to be true or in today-speak...*show me the money*. Yet, evidence for this transition from traditional teaching to creating new learning environments is mushrooming up all over. Technology in these environments **facilitate** learning, in fact, it is the **context** for learning it to happen.

For teachers and students alike, interactive technology becomes a catalyst for multitude of **best practices** and implementing proven teaching strategies. **Software** is the conduit and entropy for this transformation. Software functions specifically designed for instruction assist teachers in the actual teaching within these new environments. The three "I's" of learning, **interactive**, **individual**, and **interesting**, come to life at the intersection of this software and these new environments. **Every student** is engaged and **each student** gets attention. This is not possible **without software** that is designed with functions for these technology environments. What do these environments look like and how are they created? The chart below provides a comparative view of learning environments called for in a vast body of educational research and brain-based neurosciences.

*Because many new technologies are interactive, it is now easier to create environments in which students can learn by doing, receive feedback, and continually refine their understanding and build new knowledge.*

(Bransford, Brown, & Cocking, 1999).

## ESTABLISHING NEW LEARNING ENVIRONMENTS

### Incorporating New Strategies

Traditional Learning Environments	New Learning Environments
Teacher-centered instruction	Student-centered learning
Single sense stimulation	Multi-sensory stimulation
Single path progression	Multi-path progression
Single media	Multimedia
Isolated work	Collaborative work
Information delivery	Information Exchange
Passive learning	Active/exploratory/inquiry-based learning
Factual, knowledge-based learning	Critical thinking and informed decision-making
Reactive response	Proactive/planned action
Isolated, artificial context	Authentic, real-world context

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#### Technology and Interactivity.

The nature of interactivity, vital to learning and our human nature, is amplified by software. Software designed for teacher and student interactions provides the potential to maximize benefits from technology. New networking software designed for supervision and instruction improves and increases interactivity by multiples.

The **classroom dynamics** created by highly interactive environments creates opportunities for student learning, questions, and understanding. Fostering an **atmosphere** that encourages student **questioning and interactions** becomes a function of the software that is used on the networks. A noteworthy problem for teachers in the past using technology was that they were **spread too thin** to respond to student questions. Now, software built for networks provide functions that promote teacher-student, teacher-class, and student-student interactions. Teacher can multi-task in productive ways. Here is what one educational technology expert, Wesley Fryer recently said:

*Billions of dollars are spent annually to purchase and upgrade school computers in the United States. Sometimes, the individuals ordering these resources, however, do not adequately consider instructional needs. Access to and use of lab management software by a teacher can make a **TREMENDOUS instructional difference** in the classroom. Given the total amount of money invested in technology in school districts and the relative benefits of lab management software, the cost of such software is minimal.*

*Technology integration evangelists should make administrators, district technology planners, board members, and others involved in the purchasing process aware of the availability, desirability, sizeable benefits and reasonable cost of lab management software. By doing so, hopefully these*

*software tools can be made more widely available to educators at all levels providing technology integrated instruction in computer labs or regular classrooms.*

[http://www.wtvi.com/teks/02\\_03\\_articles/labmanagementsoftware.html](http://www.wtvi.com/teks/02_03_articles/labmanagementsoftware.html)

### **Software That Bridges the Digital Divide.**

Let's look at different glimpses of this bridge and those that are crossing over it, where teacher-controlled and student-centered technology environments really exist and the software that enables it. Particularly where they have regained control, refocused student attention, developed student-centered best practices, and turned technology into their best ally. This new category of software is sometimes referred to as lab management software, but that term is really limiting in its description. For a moment, let's visit a classroom that has crossed the digital divide. What would that be like?

### **Let's Visit a Classroom.**

One has to imagine software that will enable a teacher to take over an **entire network** and all its' computers. As a teacher imagine being able to get every student's attention, work with each and every student individually, the class collectively, or a small group. Envision communications that happen around the classroom in real-time, questions, answers, instructions, and interactions. Reviewing **every** student's work, asking **each** one questions. Showing a student's work to the entire class or an individual student. Imagine stopping temptation and incorrect behavior in its' tracks. Right in the middle of all this activity you want to stop everyone to see something else...a great picture or graphic that explains some concept. **Click.** Everyone stops. **Click.** Instantly, every student sees what you are talking about on their own screen because everyone has a front row seat. **Click.** Everyone is back to work.

Imagine the student who gets stuck, and wants helps, and immediately asks for help. With the **IM (Instant Messaging)** the teacher responds, but saves the question and answer. Someone else asks the same question. The teacher decides to broadcast the question to everyone and asks for possible answers. Answers begin coming back, but none of them are completely correct. **Click.** You simultaneously launch a website on every computer (now you can do that) and ask for further research about the question. Now the answers are **on target.** You remotely control a few students are still not getting it. Another asks the teacher to look at her work the computer. The teacher uses the **digital blackboard** features to highlight and point to areas that need attention. Then she shows her someone else's screen as a model answer. These are only a fraction of the functions, but teaching has become student-centered and highly interactive. No one is off in **Na Na Land**, or visiting **bikini.com** or checking web email. They are paying attention and learning, and this happens everyday. In this class **the real digital divide is shrinking.**

This is the new world of **networking software** and **teaching with networks.** The favorite and most functional of this type of software is **NetOp School.** While **NetOp** sounds like it stands for Network Operations or something out of a Tom Clancy novel, but it is the Danish word for *excellent.* Interestingly, it helps create **excellent schools.** Software, among other things defined in this white paper, is a key player in getting across this Great Divide. Software has always

*Hopefully these software tools can be made more widely available to educators at all levels providing technology-integrated instruction in computer labs or regular classrooms.*

played a key role in the technology formula. Here are a couple of glimpses of *NetOp School* in action. As the saying goes, *don't leave home without it*.

### **Crucible of the Classroom.**

Stories about the digital divide are not gloom and doom about what's wrong with America. They should be stories of hope and success, models for the future, our children's future. Surely, without learning they (and we) are lost. **Forest Park High School** in the high tech corridor of northern Virginia provides an interesting field study for us. It is a school at the complete end of the technology spectrum. It is a District Academy of Technology, a model school with lots of great teachers, savvy technology students, a sophisticated IT infrastructure of networks and computers, and a well-trained staff. Yet they, too, **were part** of the digital divide. They were on **the qualitative side** of the gap. Forest Park **needed** this new networking software in big way.

The Forest Park H.S. story is a successful one because it shows the **willingness of educators** to adapt to real situations. These real world settings provide one view of ways to close the digital divide. The learning environments exhibit teachers regaining control, yet student-centered in nature. Students provide a glimpse of what they can do in learning environments where they have a chance to do the teaching and help locally in closing another wide digital divide, that is with **senior citizens**. Adding technology did not close the divide in this case, but learning environments created by the teachers (and students) did.

### **Barbara McLaulin, Our Librarian. Forest Park High School.**

*With the layout of the computers in the library and in the English/Social Studies lab, it is difficult to teach a lesson and have the students fully involved in the instruction. Problems also arise when students are working either collaboratively or individually. Giving demonstrations and monitoring students open opportunities for them to become disengaged.*

*I teach a unit on integrating PowerPoint™ in collaboration with the Social Studies teachers. Without NetOp School I felt I was in a static demonstration mode tethered to a LCD projector. The students were either focused on their computers instead of on the "lesson" or in need of immediate hands-on reinforcement. The result was very unproductive and frustrating, both for the students and for me.*

*With NetOp, I'm able to fully integrate instruction and maximize lab time. If I notice lots of students struggling with a particularly difficult concept, I can break in and demonstrate to the entire class. I can share particularly relevant student work. If a student is off task, I can lock the computer screen and refocus his attention with a "chat." Computer down time has been minimized since I am able to individually monitor where the students are and what they are doing. And at the end of the session or of the day, I can check all computers from my monitor and power down all the PC's with a couple clicks.*

### **Brian Hackett, Social Studies Instructor, Director of the Learn & Serve.**

*The focus of Forest Park's Learn and Serve program is the integration of education and technology and set as its primary mission to address a technology-based approach to community service. One of these projects is our teens tutoring senior citizens on computers. NetOp School has allowed the students to be able to teach through visual*

*instructions on each computer screen. Many seniors have hearing problems and NetOp software has made a world of difference. The seniors are able to track the mouse movements on their individual screens and make individual requests for assistance that can be addressed by students at each senior's PC.*

*Our students have also used NetOp School to teach elementary and middle school students. We are also excited about the progress that has been made using NetOp with our special education students. NetOp has provided student volunteers with a tool that has helped educate all the members of the community, thus making the program an valuable asset in reaching our primary mission in Learn and Serve.*

### **Elementary Environments. Crossing the Great Divide in 4<sup>th</sup> Grade.**

Seeing technology in action at the intersection of learning, as mentioned earlier, in elementary school is always exciting. At this age the students can read, they are as enthusiastic as they will get, and their minds mature enough to challenge even the best of teachers. Technology for these students is like the pencil was to us. No big deal to use...just grab the mouse and go to work. No fear. It doesn't break. These are digitally oriented kids growing up in a wireless world. Computers are only a big deal if you don't have one.

Technology and its' ability to provide highly interactive environments is a great place to these young minds. This age reminds us of the importance to ensure all students get access to technology, because being without it at this age just difficult to explain. Learning is still exciting at this age and technology can still provide those sparks. So why describe the situation at a private school, like Grandview Preparatory School in Florida. Simple. Private schools are a serious part of the digital divide in America. They house a quarter of our students, who range across the entire socio-economic spectrum. Many private schools suffer with some of the worst technology implementations imaginable. Private and charter schools need to be included in any discussion about digital divide.

### **Donna Leech. Grandview Preparatory School**

*"NetOp is a phenomenal software program that is very user friendly. It enhances learning by keeping my students on-task. I like the IM discussion feature, so a student who does not understand something can ask me without anyone knowing that we are having a conversation. Group projects are a snap and with the IM feature, my room is much quieter. My class loves the Pass-the-Chalk feature; it gives them a chance for public recognition.*

*With a click of an icon I can simultaneously send my class to the website or program being used for class each day. I can also simultaneously have the attention of every student in the classroom with a click of the Attention icon. These features allow teachers to control each student's computer in the classroom. One of my favorite features is being able to shut down all the computers in the room by the click of an icon.*

*I liked the ability to demonstrate a new software program to my class before we used it. For example, I taught my class how to use Microsoft PowerPoint for a Florida vacation project we were doing. Everyone got to see the screen no matter how small the icons were,*

*because it was being viewed on their desktop. We viewed the final projects at their desktops, so everyone had a front row seat.*

*With NetOp my classroom is so much quieter and more productive. NetOp is a software program that you will love, need and want to use everyday. The children love using NetOp; they are never more than a mouse click away from me. You can teach without using NetOp, but frankly who would want to?"*

### **Closing the Gap in College.**

We don't normally think about the Great Divide as being a problem in college but in many ways this is where the problem is the worst. This is the age group that will be out on street the soonest. These are the ones that need technology literacy in the very near future. Colleges expect students to enter with technology skills, and while they may provide Internet and technology access, provide little or no training. These students suffer from many of the same general literacy problems as previous generations. Yet, teaching these students, many of whom lack even the most basic skills, is a huge challenge for college professors. Here is one example of one college that is making changes.

#### **George Williams, Chicago State University**

*In a computer classroom each student's attention is focused on his or her monitor and PC; and often in spite of whatever the instructor might say, the students still focus on their monitor and their own work". This is understandable since today's college students are 'at-home' with technology. Many are **far ahead of instructors** in computer use, even as **their academic skills lag** far behind. Refocusing natural predilection into learning requires regaining attention and control in the lab or classroom. Once on-task, interacting and instructing students over the network is possible, but tools for **both supervision and instruction are needed**. A new type of software has been designed just for these purposes.*

These college samplers provides a real glimpse of what college-level instructors face, and in a few years what prospective employers will face. Technology as a teaching tool provides a viable means to teach these young people, and may be provide one of their last chances to educate themselves. Our high schools can learn a lot listening to these stories from college instructors. Don't let your high school graduates leave home without basic skills, including technology skills.

#### **Rob Murray, Ivy Tech State University**

*Software has allowed me to select a student's screen and broadcast that screen to the rest of the class, giving me an opportunity **to answer a question well and once**. Students have remarked that they understand better when they **see hands-on solutions in the making**. I have been looking for a solution that would allow my students the freedom to work their PC's as needed, but also afford me control or starting prematurely before I turned them loose. NetOp allows me to broadcast the instructor's screen to my students, gain **everyone's immediate attention** and temporarily freezing their computers.*

**Bernard Ricca, DePaul University**

*This software allows student work can be shown with **on the fly** to the whole class. This rewards student creativity and **allows the entire class to interact** on exciting discoveries. In this way, the class becomes **student-centered and student-driven**. The use of the thumbnail monitoring feature allows instructors to check the progress of the **whole class at a glance** and ask individual students **specific questions**.*

**Emerging Evidence.**

These stories from schools across the country provide **compelling reasons** for closing the technology and learning gaps. When combined with current research on learning and an understanding of the importance of technology to this generation, closure becomes an imperative. Technology literacy and access, with the right network teaching tools, can play a lead role overcoming America's educational illiteracy. Today, we have a deeper understanding of what needs to done, we have greatly improved technology, a new generation of software that really makes a difference, and a national agenda that makes the time ripe now, as never before. Our children deserve no less. Their lives, the future national economy, America's entire infrastructure and well-being as a nation, will depend on this new generation of young people. Their skills, their thinking and innovations, and their ability to do work depends on what they learn and learn to do **now**, including their understanding of technology.

We see the possibilities new learning environments can provide simply by capitalizing on the students' focused attention while using (available) technology. Teachers and instructors can present information and monitor students, helping them individually on assignments or projects so that class time is not wasted. New learning **is** taking place. As a final example listen to Dr. Williams, as we see the light go on. "I make extensive use of this networking software. Working with **developmental classes**, I constantly make up grammar and structural exercises drawn from the students' own writings. I find that the students pay close attention to this work and comment that they are learning writing improvements and rules as they have **never done before**". Yes, evidence is beginning to emerge, but it takes educators like Dr. Williams, Donna Leech, and Brian Hackett lead us across the Great Divide.

**Interlocking Increments.**

Having defined the Great Divide in terms of quantitative and qualitative needs, it is easier to see how the various interlocking increments, **parts of the puzzles** are needed to build the whole bridge. It will be crossed in increments. These few examples selected from various schools across the country are significant because they represent **real-world uses of technology** as it relates to improving teaching and learning. Real changes and real bridges are developing. They do not represent theoretical models. One teacher recently described good software as the gas in the engine of technology. We need great gas, great teachers, and to make sure **every student in American** has a chance to drive on the journey of life regardless of what car they drive or roads they take.

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*Don't Let Your COWS Be an Udder (Utter) Disaster*

[www.netopusa.com](http://www.netopusa.com)

*The Changing Formula for IT Support for Schools*

<http://www.crossteccorp.com/support/resources/HuberGillan1.pdf>