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Introduction

Technology in the Classroom

I have spent more than twenty years in the exciting area of educational technology. During these years, I have found that while some believe education hasn't changed enough, many think technology is changing far too rapidly. We purchase the latest hardware (and, to some extent, even the newest software), only to find that by the time we get the system up and running, it is obsolete, doesn't do what we'd hoped, or is no longer relevant.

Educators need not only the tools, but also good ideas, sound applications, prudent use, and timely tips. These can be hard to find. This collection offers busy educators a brief compendium of recently published articles on educational technology that have permanence and value. Each article contains important information for teachers, administrators, educational technologists, and teacher trainers.

Among the dozens of publications and journals that deal with different aspects of technology in education, there are hundreds, perhaps thousands, of new articles each year. Educators are busier now than ever before and often don't have enough time to read and research in their areas of interest. With little time, it's hard to know what's worth reading, what might be useful, what new ideas can improve our teaching and our students' learning. Having talked and worked with thousands of educators in recent years, I have noticed recurring themes.

This collection is divided into those themes. Section 1, 'The Difference Technology Makes', recognises the growing research supporting the beliefs of many educators that technology in teaching and learning does make a difference—if used appropriately. Section 2, 'Transforming Teaching with Technology', focuses on new ways of using technology in teaching. Finally, Section 3, 'Making Technology Work', includes stories of schools that have successfully implemented technology in their classrooms.

Section 1

The Difference Technology Makes

Technology in teaching and learning makes a difference—if used appropriately. This means teachers need the right kind of hardware to run selected software. It may also mean that training or assistance is needed to get the maximum benefit from its use, whether in the lab or in the classroom.

The first article, 'Achieving Technological Equity and Equal Access to the Learning Tools of the Twenty-First Century', is written by three government school leaders (including me, in my former role). The article makes the case that even though school resources are limited, funds must be found (or allocated) to ensure that all students have access to these new tools. And, to assure positive results, teachers must be trained effectively.

As stated in the article, equity of access is not the same as equity of use, nor should it be. Students' needs vary and so does the curriculum. Good use starts with a good technology plan at the site level—a plan that is in accord with district goals, but also addresses the unique needs of the local population, the classroom, and the students' diverse needs. The authors also point out that for technology to work well, help is needed from the community.

Dr Berenfeld's thought-provoking piece, 'Linking Students to the Infosphere,' discusses the new realm of the 'infosphere' and the importance of electronic networks between and among students all over the globe to do research, create, and share newfound knowledge. Berenfeld reminds us that Internet access requires a new school infrastructure: computer upgrades, local and wide-area network wiring, servers, software, technical support and training at all levels.

The new 'cyberspace' consists of over 60,000 interconnected networks from all around the world. This plethora of online data contributes to a new dynamic metaphor for learning and for rethinking traditional learning paradigms. The trick is finding what you need in the mass array of data floating in the electronic ether. Berenfeld suggests

Achieving Technological Equity and Equal Access to the Learning Tools of the 21st Century

by Curman L. Gaines, Willie Johnson, and D. Thomas King

Is there a problem of technology equity in our schools? Just ask the kids and teachers who use it. Even better, ask those who can't access it enough or at all. Technology's new tools are seen as empowering, productive and motivational. They make learning fun; more importantly, they let the user both access and create new realms of knowing and doing. But there simply aren't enough of these learning tools to go around, and many learners are being denied access.

School decision-makers are aware of the critical need for broader technology access. Parents, too, recognise the importance and, those who can, provide it at home. Employers tell us that nearly all workers entering the job market in this next century need to have an expanded set of technical skills in communication, problem-solving and product. Productivity and profit will both be linked to workers' effective uses of new technologies. Many high school graduates can't compete for entry-level technical jobs. Once hired, they're unable to progress to more responsible, remunerative levels of their chosen professions. Inequities of class, gender, ethnicity, and economic disparity correlate highly with denies or restricted access to the tools of technology. The have-nots have increasingly less.

When it comes to gaining greater access, many groups and classes are simply unable. The resources are just not there. Futurists tell us that tomorrow's workers who want to stay employed, or be re-employed, will need the skill of learning new skills. Technology will be the common link among most of tomorrow's jobs. Our growth as a national power has depended largely on the expertise of our workers. If our schools fail to pass on these new skills, there may not be another opportunity. Inequity of access to today's new tools becomes tomorrow's enduring societal loss.

The State of Technology

Students don't have to share pencils. Most teachers even have their own overhead projectors, and certainly their own chalkboards. But when it comes to technology, there clearly isn't enough to go around. Yes, it does cost a lot more

From *T.H.E. Journal*, June 1996, pp. 74–78.

The Saturn School of Tomorrow

by David A. Bennett and D. Thomas King

In St. Paul, educators took a bold approach to creating a completely transformed school, one where students learn to take responsibility for their own learning.

In the world of schooling, we rarely hear the question *What if?* Powerful new ideas about learning abound, but we are hard pressed to fit them into our time-honoured traditional schooling model. Visit virtually any of the America's 16,000 school districts, and you will likely find that what's happening is what's always happened.

In St. Paul, Minnesota, we have asked—and are answering—the *What if?* question at the Saturn School of Tomorrow. Here's how it began. In early 1986, AFT President Al Shanker visited Minnesota and asked, 'Why not a General Motors Saturn plant approach in our schools?' Shanker called for teacher and student empowerment, a site-based management model, new roles for staff members—innovations not unlike the changes taking place in the automobile industry.

We had reflected long and hard about a process for systemic and powerful changes in education. Motivated by Shanker's urging, we felt we were in the right place at the right time to develop a re-tooled, transformed, completely redesigned school in which virtually every student could and would learn. We responded to Shanker's call by creating what we optimistically named the Saturn School of Tomorrow.

It's one thing to dream and talk about *What if?* visions, but moving them to reality takes another level of complexity and commitment. Educators often introduce a seemingly powerful treatment into their schools while attempting to hold all other variables constant. Too often, afterwards they tell us the treatment produced 'no significant differences' in student outcomes. Why? Because the chaos of everyday concerns in a school swamps everything else. As Ted Sizer (1983) has suggested, 'Things remain the same because it is impossible to change very much without changing most of everything. The result is paralysis.' We decided it made more sense to bring together the most powerful set of treatments we could find and try them all in a setting that encourages real change to happen.

From *Educational Leadership*, May 1991, pp. 41–44.