

grading and updating courses and seminars.

It has been said that in order to reach development and economic power in the 21st century, manual work and a good supply of raw materials won't be

enough: we will need to apply the resources of the human mind. Knowledge is never depleted, as are capital and raw materials. There is no single recipe to produce the sought-for economic changes and social welfare.

Whatever the strategy, the solution will have to be achieved through education, research, and the development of technology. And this is the road that ORT Argentina has chosen.

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5. Preparing Technical Educators for Interactive Instruction

by Patrick H. O'Neill

This paper highlights new methods in teaching strategies utilizing state-of-the-art technologies. It is based on experience in classroom instruction and learning at a regional vocational school and is applicable at various levels of education in technology and for work.

BACKGROUND

At Southeastern Regional Vocational-Technical High School, a regional comprehensive secondary school located in South Easton, Massachusetts, students graduate with a diploma from the Department of Education, Commonwealth of Massachusetts, and a competency-based trade certificate. The school serves some 1,300 students who come from multicultural backgrounds as well as various socioeconomic communities ranging from high to low income and high to low crime influence.

The guiding concept for the developments is to position the school to meet the demands of a rapidly changing workforce. Recently, the school began Phase 2 of a 5-year strategic plan to integrate all academic offerings with vocational-technical programs. This includes eliminating the general track and introducing more outcome-based practical application course content. An ongoing part of the strategic plan provides for the faculty to receive advanced technological training and interactive tools and strategies to create the environment of a 21st-century classroom.

This is done because we believe that effective teaching should mirror effective learning. Unfortunately, educators have not mounted a serious effort to organize teaching around the learning process. Instead, education has been viewed as an institution or an adminis-

trative system or set of instructional techniques. The ultimate act of restructuring is to change the process of instruction and its related acts (planning, curriculum design, and assessment) so they best reflect what we know about learning.

STAFF DEVELOPMENT FOR INTERACTIVE TECHNOLOGY

Faculty training initiatives include the establishment of a Teacher Technology Center that provides training in both Macintosh and PC operating systems and applications. Over 200 teachers attended courses in 1996. In addition, courses in current education research and trends and techniques of updating classrooms are offered on-site by several nearby institutions of higher education.

Faculty and staff are encouraged to explore innovative programs and methods, a strategy which leads to teacher empowerment. Teacher empowerment has led to the creation of teams that design strategies to correct recognized problems in an efficient manner. One instance resulted in students successfully taking ownership of their own learning and daily performance. Class work has become more personalized or customized so students could find lessons more interesting and rewarding. An element of cooperative learning was introduced to increase students' responsibility for learning by holding the student accountable for group participation and requiring the student to assist in helping others learn.

Planning for technology implementation has been an ongoing process at the school since 1992. Community members, faculty and staff, current stu-

dents, and graduates all serve as advisors on the application of technology in both academic and vocational areas. Consequently, Southeastern has planned to include interactive technology into its system until every program and teacher is equipped to deal with the technological demands of classrooms of the future. The school has utilized talents and expertise from within and has researched the product line of many vendors to assemble a system that will grow with its needs as it advances into the 21st century. A key to planning lies in the belief that the best vision of technology in education is one where technology is used to support the overall mission of the school system.

EXEMPLARY PRACTICES

The Graphic Communications program with state-of-the-art equipment is comparable with today's industry standards. Each component in the production process is computer generated with Prepress, once done in a darkroom, now done in a chemical-free computer room. Prepress system assignments are generated by the instructor in Quadra 700, and students use Power Macs to set print and lay out design. A display on 21" monitors allows for clear interpretation of the print. Tektronix color printers, QMS tabloid printers, and an AGFA Imagesetter produce quality print that meets industry standards. Software used in the program is of current industry standard and includes Adobe Photoshop, Adobe Illustrator, Corel Clip Art CD, and Kodak Photo CD. The CD output can be viewed by students on a 27" JVC monitor as well as LCD overhead panels and a 4000 Lumen overhead.

Students in Building Trades receive

CAD before they enter Grade 11. This CAD program works on Dell Pentium stations including a 27" monitor/VCR, HP plotters, and HP Deskjet 2000. Each student learns the AutoCAD and VisualCAD software packages and is required to design his or her "dream home."

The Computerized Office Technology program uses a learning package in which all computers are IBM and networked through the Novell system. Students work dependently and independently of the teacher in a variety of settings: medical, legal, general. Once students are proficient in a competency, they intern in a regular office setting to get a sense of real life office practices while utilizing the technology in which they have been trained.

Students in Health Services programs are exposed to a program series that includes CD-ROM medical terminology, which brings up the latest in vocabulary and definitions within a context of "live-work" scenarios that students are more likely to identify with

and remember longer. Also, several computerized dolls (male/female, adult/child) allow for realistic simulations of patient and infant care.

Science labs utilize the programs of several vendors, for example, Optical Data Corporation's *Living Textbook Laserdiscs*. Using a Power Mac, a laserdisc, a large monitor, and the microscope-adapted Flexcam camera, biological and physical science experiments are demonstrated in full motion by the instructor to the entire class. Such an experiment can also be shown via telecommunications to a large group of students assembled in the school's cinema.

In addition to these programs, the school also has the services of a contemporary audio-visual department that can augment any curriculum. An audio-visual computer with a scanner produces multimedia presentation and visual aids for use throughout the school. The Video Toaster is used to add dimension and text overlay in tutorial and special interest videos.

We can report that there is a heightened awareness of the need to incorporate elements of a technological society in these classrooms. Students and teachers communicate through several mediums that assist in the sharing and manipulation of the learning process. Teachers have become facilitators, and students, in the best sense of the term, are fine-tuned apprentices, ready to accept the challenges of a rapidly changing society. Both are learning the immediacy of interactive technology as it is occurring. Classrooms that are no longer boring or mundane, but instead are active as a result of electronic resources, have become the centerpiece for the restructuring movement. Faculty and students involved in interactive technology training are excited by the prospects. Those who sit on the edge get closer and closer to the process. Continuing professional development, cooperative teaching, and train the trainer strategies are expected to get everyone on board eventually.

References

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6. Technology-Based Programs and Drop-Out Prevention

by Phillip L. Cardon and Kip W. Christensen

In the United States, a large number of students leave the educational system before they receive a high school diploma. Many of these students are ethnic and racial minorities, may be academically and physically challenged, or have emotional and psychological problems. Such students are broadly considered at risk of dropping out of school before obtaining their high school diploma.

Many of these high school dropouts would remain in school if there were successful alternative high school edu-

cation programs available that were structured to better meet their specific needs.

Some of the most successful alternative education programs in the United States use technology to help students remain in school. The purpose of this article is to help teachers, principals, and school administrators understand that the use of technology in alternative education programs can help retain at-risk students in secondary education. This is briefly discussed under the following topics: characteristics of at-risk

students; some effects and consequences of at-risk students dropping out of school; alternative programs and the use of technology; alternative program factors that contribute to the retention of at-risk students; some technology-based alternative programs that have been implemented to retain at-risk students; and technology to assist physically challenged at-risk students.

CHARACTERISTICS OF AT-RISK STUDENTS

McCann and Austin (1988) defined