Journal of Catholic Education

Volume 1 | Issue 4 Article 8

6-1-1998

A Sabbatical View of Educational Technology

Margaret E. Curran

Recommended Citation
Curran, M. E. (1998). A Sabbatical View of Educational Technology. *Journal of Catholic Education, 1* (4). http://dx.doi.org/10.15365/joce.0104082013

FOCUS SECTION

A SABBATICAL VIEW OF EDUCATIONAL TECHNOLOGY

MARGARET E. CURRAN
Annunciation Catholic Academy

Catholic schools throughout the country are actively engaged in the process of integrating technology into their schools. A wide range of programs exists, and those programs are at various stages of development. The author visited a sample of schools that have a strong technology emphasis and identifies key elements within those programs. A review of those elements can be helpful in creating new programs.

In the fall of my eighth year as principal of a small suburban school in the Diocese of Orlando, I had the opportunity to take a three-month sabbatical. Since our school was considering how to successfully integrate technology into our existing programs, I decided to make educational technology the focus of the sabbatical. I would travel throughout the country, visiting other schools to learn from what they were doing. Limited funding and other priorities had resulted in our school's being considerably behind in the area of technology. Why invent the wheel now? Why not learn from the many exciting things already being tried and proven by other schools? Our school would benefit from my sabbatical and so would I.

With the help of a member of our technology committee, a notice went out on the Internet: Principal of small Catholic school interested in visiting other schools to see what they are doing in educational technology. This, my first venture out into cyberspace, was a great success! I received 16 invitations to visit schools from Maryland to California. I grouped the schools by region, eliminated schools that could not be grouped, added New Frontiers schools from a list provided by the National Catholic Educational Association (NCEA), and set off on my journey.

Catholic Education: A Journal of Inquiry and Practice, Vol. 1, No. 4, June 1998, 445-456

In the course of 10 weeks, I visited 24 schools in 10 states, attended 3 major conferences, and saw my family very little! It will probably take a couple of years to process all that was learned, but I would like to share some of the insights received and knowledge acquired.

VARIETY OF PROGRAMS VISITED

There was wide variety in what was being done with technology. Schools had taken different approaches to meet their local needs. As I tried to ascertain basic trends and categorize what I was observing, the difference between educational technology and technology education became clear.

Most of the elementary schools visited were attempting to use technology to enhance their existing educational programs. They were utilizing technology as an educational tool and means of support. Few schools were engaging in technology education—teaching about technology: how it works; how it can be manipulated; and how it influences our lives. Because of this restricted view, most schools had also concentrated their economic resources on computers, although a few had realized that "technology" was not limited to computers and were integrating laser discs, phone systems, flex cams, still cameras, and video cameras very effectively in the learning process.

Almost all the schools visited had also discussed which computer platform to adopt. Surprisingly, almost all were using Apples or Macs as their computer of choice. While most schools were gradually acquiring faster, more powerful computers, a few of the schools with the most limited economic resources were still using their Apple IIe's effectively not only for drill and practice of basic skills and word processing, but also for enhancement of science and social studies curricula. In Ohio a school had networked its Apple IIe machines; I had not known that was possible! In almost all the schools I visited, the basic philosophy with respect to older, more limited use computers was, "They will always do what we bought them to do. If money becomes available, we will buy newer machines with different purposes in mind." In true Catholic-school spirit, they were not frustrated by what they did not have, but were striving to make the best use of what they did have.

Many more schools than I would have imagined had network capabilities. From these schools came an education about the need to run fiber optic cables between buildings but the adequacy of using category five (CAT 5) within buildings. I was surprised to find that the cost of this wiring and the way Catholic schools had obtained it varied widely throughout the country. In southern Ohio many schools had networked their computers through generous grants from Ameritech. One high school had obtained sufficient funds to install a T1 line which would enable it to do distance learning and participate in programs such as *CU See Me*. In the San Francisco area, Catholic

Television Network (the rough equivalent of a diocesan educational television network) had provided the labor for retrofitting (rewiring the school to provide the ability to network computers) at a very reasonable cost. In Indiana one Catholic school had entered a creative partnership with the local public school and the town library to share the cost of bringing broad band cable within reach of all three institutions. A few schools in other parts of the country had done the interior wiring themselves over the summer with the help of skilled parent labor.

I was delighted to see that students in Catholic schools throughout the country were going on-line to enhance education. At the high school in Ohio, students in Spanish class routinely corresponded via the Internet with students in Mexico. Schools in Oklahoma, Texas, Kentucky, and California were successfully integrating commercial on-line services such as Scholastic to add new dimensions to their literature and social studies courses. It seemed that even if a school only had one modem, a teacher was effectively using it to broaden students' horizons. And at a school in Indiana I learned that modems could be networked too! In my ignorance I had thought that each student had to be at a computer with its own modem for any type of group project involving the Internet.

Most of the Catholic schools visited still had their computers centrally located in labs. Many, however, were adding additional computers to classrooms. A few had moved older machines into classrooms and placed banks of more powerful, faster computers in the media center.

Media centers themselves had been the focus of extensive revamping in some of the schools. Many of the centers had automated to the point where the entire collection was catalogued electronically. The software used for this automation varied widely throughout the country but appeared to be more uniform within regions—the West Coast, for example, appeared to favor Follett; but Alexandria, which was popular in the East, was almost unheard of out there.

Most of the schools which had updated media centers had CD-ROM towers with multiple sources of information (encyclopedias, periodical abstracts, and various other reference materials) available to students at all times. A few had on-line services such as *The New York Times* and America Online available in the media center as well. One school encouraged students to employ user groups on the Internet as a source for gathering information. Students, for example, had gone on line to interview a group of senior citizens about their experiences during World War II. Their contacts with the seniors added a whole new dimension to the class's project on the impact of the war on the lives of ordinary people. Another school, this one in Kentucky, had a global education program which connected each class with a different foreign country. School-wide projects were done by collecting data from each of the countries.

A few schools cautioned me about not networking all the computers in the media center. Their experience was that some multimedia programs did not work as well networked as they did in a stand-alone environment. They suggested leaving at least two computers in the media center off the network to facilitate the use of these programs.

While traveling in Indiana, I saw a centralized media retrieval system for the first time. Instead of having VCRs and laser disk players in each room, a school outside of Indianapolis had invested in a centralized system which was housed in the media center. Less than a dozen pieces of equipment served all the needs of the school. From computers in the classrooms (or on slips of paper sent to the media office), teachers requested that a video or disk program be projected on the television monitor in a specific room or rooms. Student volunteers placed the tape or disk in the equipment in the media center, and it was displayed in the specified location. The system, while costly in some ways, was very economical in others. It allowed a large school to purchase far fewer pieces of equipment, eliminated the moving of equipment from one room to another, and allowed for the simultaneous showing of one program in several classrooms. It also had the capability for live video announcements to be made by the student council each morning.

The use of technology for administrative purposes varied greatly from school to school. Several schools were using Parish Data Systems software for administrative purposes and delighted in knowing they could, with very little effort, produce the statistical data for their annual reports to NCEA, produce tuition billing, track attendance, and provide a general ledger of accounts. *MacSchool* was equally popular with some Apple-based schools since it could handle everything from attendance to grade books and lesson plans. The most innovative program I saw was written by students and teachers in an elementary school in Kentucky. The program allowed children to log on and record their own attendance in the morning and order their lunch as well. Since the school was networked, this information was immediately available in the office and the school cafeteria with just one command.

KEY ELEMENTS OF SUCCESSFUL PROGRAMS

While the programs I viewed varied greatly from school to school, there were certain key elements contained in almost all the successful programs.

The single most important factor was inspired leadership. Schools that had at least one full-time staff member who was truly excited about incorporating technology were usually successful at doing so. Often this leader was the principal. Where the principal was excited about the use of technology, things appeared to get done more quickly and effectively. In some of the schools that were successful, the principal had limited knowledge of technology but had made it a priority for the school. In these instances the prin-

cipal had often hired a full-time staff member whose job included troubleshooting hardware and networks, keeping abreast of the latest developments in educational software, training faculty in the applications and use of everything on site, and doing lots of hand holding. The presence of this person on staff appeared, more than any other factor, to ensure a truly successful integration of technology into the full learning processes of the school. While having such a person on staff might appear to be a strain on most budgets, the return on the investment seemed well worth it in schools that were serious about the inclusion of technology in the daily life of students. In these schools technological resources were being used to potential. Hardware and software that were purchased were not sitting around underutilized.

Having a written technology plan was also of major importance. In schools where a group of teachers, administrators, parents, and others had collaborated in the formulation of a technology plan, progress was focused and steady. Technology plans which stressed educational outcomes and pedagogical objectives, rather than the mere purchase of equipment, appeared to be most successful. In these successful schools, technology was used to present specific parts of the curriculum, expand concepts, and enhance higher-order thinking skills. Furthermore, software which appeared to do nothing but drill was noticeably absent when the technology plan focused on educational outcomes.

Another common denominator of successful programs was appropriate teacher training. Teachers must not be allowed to feel that they have been left helplessly behind in the use of technology (Brooks, 1997). In the best programs observed, training was not only done on site, but was also ongoing. Training with newly acquired equipment and software was not done once at the beginning of the year by some person who disappeared a few hours later, but was conducted by a staff member (the full-time staffer or "inspired leader" referred to above) who was always there when problems arose. These "troubleshooters" usually had a limitless supply of patience and dedication. Invariably they told me that part of their job was to convince their colleagues that a particular piece of equipment or software would make their lives easier by helping them do what they were already doing but in a better way. They were all dedicated to teaching the concept that technology was not just another burden placed upon teachers, but a tool which helped even veteran teachers be more effective, freeing them to do other things. The best technology coordinators rescued teachers in trouble not by doing for them, but by explaining to them—over and over again if necessary.

Commitment to this type of training carries a price as well. David Thornburg (as cited in DeZarn, 1997) suggests that 30% or more of a technology budget should be allocated to staff development. None of the schools visited had such a defined formula for staff development, but the best programs had openly acknowledged the importance of the concept.

Since returning from my sabbatical, I have been excited by the literature which suggests an important difference between *educating* teachers rather than just *training* them if they are to accommodate new knowledge rather than simply assimilate new processes (Caverly, Peterson, & Mandeville, 1997). Less appealing is the "Generation Why" program described in a recent *Wall Street Journal* special report on educational technology (Cwiklik, 1997). This program in Olympia, Washington, offers training directly to students who then serve as technology mentors to teachers.

The very best programs I saw had invested a substantial amount of economic resources in technology. In some cases the money had come from the parish community. Technology was a priority for these parishes and they had invested accordingly. Often other things (e.g. playground equipment, new carpeting, or library books) had been de-emphasized in the budget in order to purchase equipment. On the other hand, many schools had funded their technology programs through grants and suffered no losses to other line items. In more than one school, the technology coordinator was responsible for seeking grants and, in so doing, generated revenue which more than justified the salary.

EQUIPMENT AND COMMERCIAL PROGRAMS: BASICS—PLUS SOME BELLS AND WHISTLES

Each school I visited was unique. The direction that each had taken with educational technology reflected a response to local conditions. Nevertheless, many of the components of programs I observed can be replicated fairly easily since they involved commercially available products or programs.

One idea which impressed me was the concept of the teacher workstation. Several schools on the West Coast had provided each teacher with a workstation instead of the traditional desk. This workstation was comprised of any combination of various elements (computer, laser disc player, VCR, overhead projector, laser printer, etc.) and was to be used routinely for basic instruction throughout the course of the day. Teachers who had totally bought into the concept were producing phenomenal multimedia lessons as part of their daily routine. Students in one high school were using the equipment in the teacher workstation to produce some of the finest student reports I have ever seen.

Presentation software was far more commonly in use than I had imagined. Many teachers with computers connected to television monitors as part of their workstations were using either *Aldus Persuasion* (for Macintosh computers) or *PowerPoint* (for IBM-compatible computers) in presenting lessons to their students. Basic facts, outlines, and highlights of lessons were presented in colorful, exciting ways which were never before possible. Teachers who routinely used this technology stated that students were more

attentive to lessons presented in this way. Connecting the computer to the TV monitor was very simple. A cable connection was necessary to change from digital imaging (in the computer) to analog imaging (on the TV monitor), but several companies produce relatively inexpensive devices to do this. The ones in use most often were *Focus LTV* and *Tvator.*

I learned that in addition to projecting to a TV monitor or a high intensity LCD panel, which only have viewing capacity for a limited audience, computers can be connected to a recently marketed liquid crystal projector which utilizes technology similar to the LCD panel but is intended for a much larger audience. These projectors allow the use of presentation software with text, graphics, pictures, or charts to groups of several hundred without losing the sharpness of the image. InFocus Lite Pro, N View, and Sharp liquid crystal projectors were in use in schools I visited. Some models allow for a VCR as well as a computer to be connected to the projector.

I learned that the centralized media retrieval system first seen in Indiana was available from many companies throughout the country. AMX, Dukane, TechNet, and Rauland Borg all produce similar products. Schools interested in the concept, therefore, might want to examine not only cost but the service record of the provider in their area.

At NCEA conventions over the past couple of years I had seen a flex cam but was reluctant to purchase it because of our school's limited budget. After seeing its multiple uses in schools I visited, I became convinced that the investment would be worthwhile. A flex cam is a gooseneck device which magnifies the source it is focused on and projects that image to a device such as a television monitor. It produces an exceptionally sharp and clear image. It can magnify details as fine as the ridges on fingers which produce fingerprints. I saw it used to focus an entire group's attention on a specific spot of the globe, on a part of a leaf, and on an illustration in an art book. It can also be easily connected to the teacher's microscope to ensure that students are focusing on the correct part of a slide. In certain situations, such as with very young children, using a flex cam would even replace the need for each student to view a specimen through a separate microscope. The flex cam is a very versatile piece of educational equipment whose uses appear to be myriad in the hands of good educators.

In the area of science, I was also impressed with the available variety of commercially-produced laser disk programs. Many schools had been introduced to science laser disk programs when they attended New Frontiers. Others had discovered them on their own. From Ohio to California, however, the schools visited were very pleased with the programs and their ability to add to science programs visual dimensions that were not previously possible. Some of the specific programs that teachers were happy with were *Windows on Science* produced by Optical Data and *Video Discovery.*

The use of distance learning was being discussed throughout the country,

but none of the schools I visited were using it. In Ohio, however, I was introduced to *CU See Me* for the first time. Cornell University (CU) has a program whereby classrooms around the world can communicate and engage in discussions and projects together. Cornell coordinates the program, with experts and scholars in certain fields becoming available to students in many different countries. Schools with Internet connections of at least a 56K bandwidth can log on with visual and auditory images (See Me). A T1 line would be even better for such programs, but it is not absolutely necessary.

The concept of bandwidth was completely new to me, and I'm not sure I still understand it properly, but I learned that an increased width improved the type of communication possible across a cable. T1 appeared to be the maximum in use in the schools I visited, and there were very few schools with that type of cable.

Students in a few of the schools had become quite proficient in the use of *HyperStudio,* a commercially produced software program. With this program, middle-school students were preparing their own interactive programs. In one school in Indiana, for example, seventh-grade students had designed and created a program to be used by fourth graders prior to their annual field trip to Conner Prairie to learn about Indiana state history. The program the seventh graders created allowed the younger students to view a map of Conner Prairie and click on various parts of the map to get a more detailed view of that spot. The seventh graders had included pictures they had taken, music they had taped, and interviews with employees at Conner Prairie in various parts of their program. In designing the program, they had learned not only about Indiana history but about technology and its applications as well.

As far as courseware was concerned, I observed two effective, though somewhat costly, programs. *Success Maker* is an integrated learning system which allows for individualized instruction in mathematics and language arts. At least one file server is required, and the school in Kentucky at which I observed its use did so in a lab setting. Groups of students, accompanied by their class teacher, visited the lab once a week to work on specific objectives which could vary from student to student. This particular school had 16 Macintosh computers available for using *Success Maker.*

DOS-based courseware is also available from IBM. *TLC (Teaching and Learning with Computers)* is a total curriculum with components in mathematics, language arts, and reading. Although I did not get an opportunity to see it in a school setting, I previewed it at one of the technology conferences I attended during my sabbatical and was very impressed with the scope and quality of the programs. Effectiveness data provided for schools utilizing *TLC* were most impressive.

Courseware and curriculum-enhancing programs are not limited to math, science, and language arts. Yamaha has a fine program called *Music in*

Education which uses networked keyboards to teach everything from notation to pitch and rhythm. They provide comprehensive teacher training to those who either purchase or lease the program and have a toll-free number for technical assistance. *Music in Education* requires no special wiring and is managed through a teacher workstation with one Macintosh computer. The program includes everything from a seating chart component, which automatically records students' responses, to a grading program. The students I saw receiving instruction with *Music in Education* had a high level of participation and enthusiasm.

Accelerated Reader is a comprehensive reading program used by many schools throughout the country. It is a computer-based tool that encourages students to read more and better books.

CREATING A MODEL PROGRAM

Given my experiences during the sabbatical and the information I was given by generous administrators from Louisville to Seattle, I now have a definite idea of the type of program I want for our school. The program would be a combination of the best things I saw; it would include educational technology as well as technology education.

For starters, I would hire a technology coordinator. This position is necessary if resources are to be used to their best advantage. The technology coordinator's job would include

a. keeping abreast of the latest developments in educational technology and working with the administrator to see that the school keeps current;
b. providing ongoing inservice training for all staff members (faculty, administration, and office staff);
c. trouble-shooting hardware and software problems;
d. working with small groups of students in technology education;
e. coordinating community volunteers with technological expertise who would like to offer services to the school;
f. chairing the technology committee of the school and guiding this group in formulating and revising a technology plan for the school; and
g. aggressively seeking funding for the school's technology budget.

A technology plan would be essential for the school. This working document would be revised and modified every year by a technology committee comprised of teachers, parents, members of the school board, and student representatives. Educational objectives would be the backbone of the technology plan, and every part of it would be tied to educational outcomes. The goal of the technology plan would be to facilitate the acquisition of knowledge, not the acquisition of equipment. As this document takes on a true life within the school community, other changes would be inevitable. Only if

there are simultaneous changes in pedagogy, assessment, and curriculum would the time and effort spent on instructional technology produce noticeable educational outcomes (Dede, 1997).

The model school would not have a computer lab. Nor would it have computer classes. Technology would be as much a part of the daily routine as the use of the marker board or a textbook. We have classes in neither; why do we presume we need classes in computers?

Each classroom would have a minimum of five computers for use by small groups of students throughout the day. In this computer center within the classroom, students would not be limited solely to practice and drill. They would use specific courseware to be introduced to concepts; they would not be limited to all working on the same level; the teacher would manage the courseware to provide for the varied ability levels within the class. Students would use the computers to access the Internet for research purposes. Using *HyperStudio*, *PowerPoint*, and similar programs, students would be able to create multimedia portfolios and presentations for their own use and that of other students within the classroom. Since all the computers in the school would be networked, students would access information in the media center without leaving the classroom.

Using computers in this way would require a shift in focus and additional training for many teachers. Therefore, the model school would provide time in a teacher's regular schedule for exploration of hardware and software. Unless we provide this time for teachers, technology will never be integrated into the curriculum in ways which are most advantageous for students.

Instead of a desk, each teacher in this model school would have a teacher workstation similar to the ones described earlier. Since teachers would need to model the effective use of technology, very little paper would be generated for routine administrative purposes. Lesson plans would be done on computer and sent via the network to the administrator. Grade books would be electronic and parents would have dial-up access to them over special phone lines. Teachers would no longer have to send home weekly progress reports for students who have a tendency to fall behind in assignments; parents could dial in and know the results of all assignments and tests as soon as they are posted by the teacher. (Phone Master has already made this technology available by working with *Excelsior Grade* 2, an excellent grade book program.) Homework assignments, of course, would be available with dial-in access as well.

A system of internal e-mail would be used throughout the entire school. All written communication within the school would be by computer only. Requests for repairs would be sent to the janitor via e-mail, and lunch would be ordered by students and staff alike utilizing the network. Weekly staff communications would be posted on the network rather than placed in mailboxes. There would be no need to send attendance information to the office

via messengers. Time and trees would both be saved through the effective use of a comprehensive e-mail system. Staff, of course, would have access to the school's network through a modem on their home computers as well.

The media center would be highly technological. All services would be fully automated. The traditional card catalog would not exist. Computers in the media center would connect to the local public library as well as the state university system. The school would subscribe to automated guides to periodic literature and electronic news services. The centralized media retrieval system would be prominently housed here as well, and students would help in its programming and operations.

Great care would be taken that students still develop a love for books. Quiet corners and a reading room with soft chairs and couches would be an essential part of the media center so that students would be encouraged to take a book, settle down, and read for pleasure.

Since technology is changing the daily lives of our students and changing our view of the world, we have a moral obligation to assess the impact of technology and media from a Catholic perspective. There is a definite need for media literacy throughout the curriculum in all schools, but the need is more acute in a school which emphasizes technology. In this model school, therefore, media literacy as a concept would be woven throughout curricula for social studies, health, literature, science, and religion. Powerful yet practical resources for such programs are readily available (Considine & Haley, 1992; Rossi & Soukop, 1994; Worsnop, 1994).

As part of the total program, students would have many opportunities to produce various forms of communication. Management of various media lends to a more complete understanding of how media can be purposefully and intentionally manipulated. A small video production studio which ties into a closed circuit television network, therefore, would be ideal.

The same technology used to manage the closed circuit television would control the intercom system, the bells, and the clocks. Every clock in the school would actually show the same time!

Part of the television network would be used for distance learning. Foreign language instruction, for example, could be coordinated with teachers who are not physically on campus. Why hire a Spanish teacher and require all students to limit themselves to one language when a high school in the same diocese already has a Spanish, French, German, Italian, Latin, and maybe even Japanese teacher? Advanced mathematics and science could all be coordinated in a similar fashion.

The technology already exists for this model school. What might have seemed far-fetched for a Catholic school even five years ago is now within reach. It is up to us to do it.

REFERENCES

Brooks, S. (1997, August/September). Incorporating technology into your teaching. *Today's Catholic Teacher, 31*, 10-12.

Caverly, D., Peterson, C., & Mandeville, T. (1997). A generational model for professional development. *Educational Leadership, 55*(3), 56-59.

Considine, D., & Haley, G. (1992). *Visual messages: Integrating imagery into instruction.* Englewood, CO: Teacher Ideas Press.

Cwiklik, R. (1997, November 17). Those who can't. *The Wall Street Journal*, pp. R8, R14.

Dede, C. (1997). Rethinking how to invest in technology. *Educational Leadership, 55*(3), 12-16.

DeZarn, P. (1997). Technology planning from the elementary school perspective: Beyond chalk, talk, and textbooks. In R. Haney & A. A. Zukowski (Eds.), *New frontiers: Navigational strategies for integrating technology into the school* (pp. 83-91). Washington, DC: National Catholic Educational Association.

Rossi, P., & Soukop, P. (1994). *Mass media and the moral imagination.* Kansas City, MO: Sheed & Ward.

Worsnop, C. (1994). *Screening images: Ideas for media education.* Mississauga, ON, Canada: Wright Communications.

Margaret E. Curran, Ed.D., is principal of Annunciation Catholic Academy in Altamonte Springs, FL. Annunciation Catholic Academy, a newly founded high-tech elementary school, is a referral site for IBM international visitors. Correspondence concerning this article should be addressed to Margaret E. Curran, Ed.D., Annunciation Catholic Academy, 974 Montgomery Rd., Altamonte Springs, FL 32714-7418. E-mail: curranm@annunciationacademy.org