

How The Nintendo Generation Learns

Recently, I was chatting with my son, Daniel (age 7) about Nintendo. I asked him if he could bring it in to school for show and tell and he was horrified! "No," he exclaimed, "that's not for learning." Well, what do you, dear reader, think about that? Is Nintendo for learning? No one is watching/listening . . . go ahead . . . admit it . . . *You don't really like Nintendo.* (Of course, when you play Tetris, that is exercising problem-solving skills. Right.) And, after all, you didn't use all that technology in school, and you learned just fine. So, why do "kids these days" need all this new multimedia technology, anyhow? That technology just makes it fun and easy to learn—it's just glitz. And as for calculators. . . .

If you didn't go through the above sort of reasoning, you know plenty of folks who would. Such reasoning, frankly, is not particularly productive. If our goal is to enable young people to develop their strengths, learn to deal with their weaknesses, and more generally, help them participate in a positive manner for the common good, we are making a big mistake. We are denying them their identity. Who they are is not who we are. And a key part of who they are is technology: the Nintendo Generation: TV, video, computer games, walkmen, mounds and mounds of batteries.

Daniel *does* learn through playing with Nintendo. He has conversations about problem situations with his colleagues, teachers and parents, devours magazines about games, and intensely practices various techniques. Sure, some time is

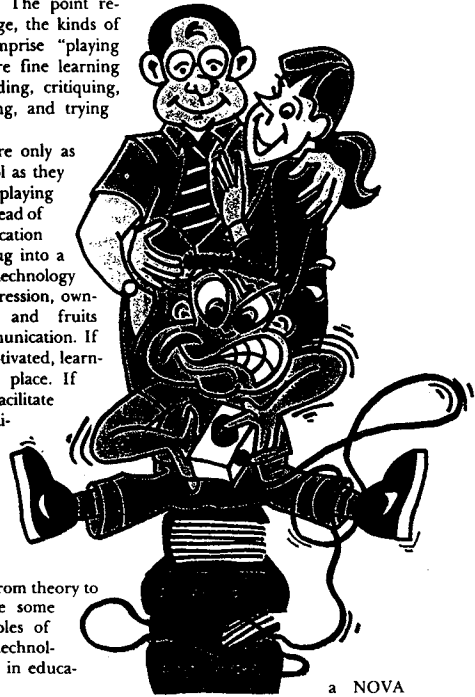
spent in the mindless mode. So what else is new? The point remains: by and large, the kinds of activities that comprise "playing with Nintendo" are fine learning activities e.g., reading, critiquing, talking and sharing, and trying out ideas.

"Oh, if kids were only as motivated in school as they are in playing Nintendo. . . ." Instead of this lament, education needs to turn a bug into a feature: let us use technology to further self-expression, ownership of ideas and fruits thereof, and communication. If a student is not motivated, learning does not take place. If technology can facilitate those intrinsic motivators and if the cost of that technology is within the budgets of school systems, then the implications are obvious.

OK, let's move from theory to practice. Here are some provocative examples of how "multimedia technology" is being used in education today.

The Great State of Texas Takes a Bold Step

Teachers have long been using VCRs in their classrooms. Instead of using out-of-date textbooks children cannot, will not and do not read, it makes good sense to record



a NOVA TV show and

bring it into class. The science content is fine and the delivery is most accessible. Texas has recently tacitly acknowledged the deep significance of this grass roots activity by being the first state in the Union to legislate that videodisk-based materials can be used in place of a traditional textbook.

For example, Optical Data Cor-

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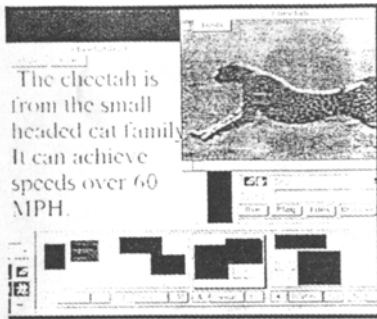


FIGURE 1. MultiMedia Works: Design Space

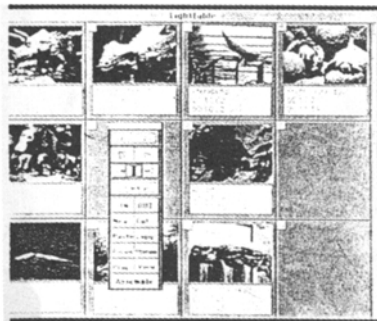
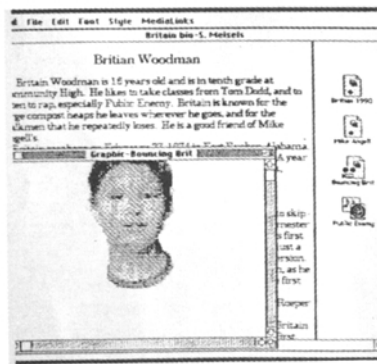


FIGURE 2. MultiMedia Works: VideoLight Table



poration's pioneering "Windows on Science" videodisk and supporting curriculum and teacher materials for elementary science (grades 1-6), has just been adopted by at least 65% (2,200) of the schools in the state of Texas!

A teacher uses the videodisks to present information about science to the class: The teacher stands at the front of the class with a remote clicker and moves through segments of the videodisk that correspond to concepts in the curriculum. Students review the material when the TV + videodisk player is available.

While the initial use of this video material is too didactic for my taste, the Texas experiment is unquestionably an imaginative stab into the future. Textbooks—written words—have been around for a long, long time. Images can now take their place—yes sir, that is a Texas-size change.

Next Step: Video + Computer = Interactive

One learns by doing; one learns by being active. Add a \$1,700 personal computer to that TV + a videodisk station and bingo, the game is radically changed: it is now interactive. *Palenque*, for example, is TV plus videodisk plus software that takes students on a digital field trip to a Mayan ruin in southern Mexico. Using a joystick, students navigate through extensive video sequences of the site, buildings, rooms, and hieroglyphs. For commentary and guidance, the navigator clicks on a button, and up comes a Mayan specialist, and an 8-year-old travel partner.

*Palenque*, quite appropriately, provides the traveler with typical traveler tools: a digital camera, digital tape recorder, digital compass, digital flashlight, digital album. Recording an observation or two in the album, or exploring the museum multimedia information base,

is a natural part of the field trip. In techie talk, a student's notebook represents the student's linearization of what is a highly non-linear, multimedia information base. In edu-talk, the student is using some new tools to "write" a "story."

Started in 1985 at the Bank Street College of Education in New York City and now under the direction of Kathleen Wilson, *Palenque* will soon be available commercially. While virtual concession stands and gift shops are not the same thing as being there, *Palenque*-style technology connects students to worlds outside of the classroom and allows them to make those connections their own.

Lights, Computer, Action!

Desktop video is the word processor of the MTV generation. For example, children in several California schools are creating multimedia documents *MultiMedia Works*, a desktop composition environment developed by Roy Pea at the Institute for Research on Learning, and now of Northwestern University.

Running on a Mac II, *MultiMedia Works* employs a film-making metaphor for multimedia composition. Students create a storyboard, consisting of panels, to outline their multimedia movie. A panel is an arrangement of various media (text, video, graphic) represented as colored icons (bottom of screen shot, Figure 1). Click on a panel, and the media are presented (top of Figure 1). One particularly provocative media tool available in *MultiMedia Works* is the VideoLightTable (Figure 2). Here a "writer" can cut-and-paste video sequences that are drawn from a videodisk library or from video the students themselves shoot.

Throwing high technology, even wonderful video technology, at students will not turn them into overnight Coppolas. Key to *MultiMedia Works*' success was the learning culture consciously developed in the class, under Christina Allen's guiding hand. In contrast to a didactic

FIGURE 3. MediaText: Bouncing Britain

Courtesy of Magnus Design

Courtesy of Seth Hensch, Community High School, Ann Arbor, Michigan



**LOE**

**Students today can't prepare bark to calculate their problems. They depend upon their slates which are more expensive. What will they do when the slate is dropped and it breaks? They will be unable to write!**

**Teacher's Conference 1703**

**Students today depend upon paper too much. They don't know how to write on a slate without getting chalk dust all over themselves. They can't clean a slate properly. What will they do when they run out of paper?**

**Principal's Association 1813**

**Teachers as Video Producers**

At the St. Louis Zoo a teacher can pop a blank VHS cassette into a VCR connected to a Mac II, use IMRE to browse eight videodisks for relevant video clips on animals, or biology concepts, and walk away with a videocassette crammed full of professional quality video. The cost? Nothing, except for the videocassette itself—and the teacher's time.

In fact, the key is the teacher's investment of time. Through a visually engaging and straightforward interface (Figure 4), a teacher can invest a modest amount of time and construct a videotape that is customized to what the teacher perceives as the particular needs of his/her own class. (Figure 5 shows a teacher adding a video clip to his or her "shopping list" that will eventually be printed to the teacher's videocassette.) Given that personal investment, the teacher is both more likely and better prepared to use his or her custom videotape to foster interaction and discussion in class, rather than simply showing it to the class like one of those deadly audiovisual film strips.

The intellectual property lawyers out there are probably jumping up and down by now asking who gave the teachers the right to copy someone else's images? Who paid for that right? In addition to developing IMRE, Burt and David of Arnowitz Productions went through all the legal gyrations so that teachers using IMRE will not go to jail. IMRE-like systems, however, raise all those nasty copyright issues: who owns an image? what is an image? what is plagiarism in the digital, networked era?

**Design Studio Learning for Teachers**

Six-thousand teachers have been lining up to take a one-day workshop on "a model classroom of the 21st century" at the Teacher Explorer Center in East Lansing, Michigan. Instead of lectures about the classroom of tomorrow, Fred

D'Ignazio director and Sharon Goth-Tew, use the classroom of today plus readily available technology to provide attendees with a genuine learning experience in multimedia research and publishing. During a six hour workshop each of the five teams (four to a team) produce a videotape, using for example camcorders, and digitizing cards, on IBM machines, that tells a story to the folks back home in the school district.

Workshop attendees universally attest to having a "great," "wonderful," and "unforgettable" experience. The demand is such that two more Teacher Explorer Centers are being opened up in Michigan (in Oakland directed by Anne Porter, and in Bay de Noc directed by Joe Clairmont). Teachers and administrators are clearly overcoming any (reasonable) apprehension they more than likely have, and are sending a clear signal that they are open to change, to new learning cultures, to new tools. Get set: it may happen faster than we expect.

**The Wild Card: The Home Information Appliance**

All the above experiments have been carried out on desktop, personal computers. But what about the consumer electronics industry? If you are in Japan and feel comfortable working with Japanese characters, pick up a \$450 Sony Data Disk Man, a hand-held CD player that can "play" dictionaries, encyclopedias as well as music. In the U.S., Commodore has CD/TV, a sleek, black box sold in stereo stores, for about \$1,000, that is a CD player running a 68020 under the hood. And, the software for such hardware is coming along very fast also. A whole new generation of publishing houses, such as The Voyager Company, Warner New Media, Inc., ABC News Interactive are producing provocative "titles" solely on electronic media.

What happens when the CD/computer is \$250—the price of a VCR—say, Christmas 1993?

*(continued on page 95)*

We thank David Thornberg who provided us with quotes from Fisher-Sankley Bernick.

**LOE***(continued from page 26)*

(Please—*Not* a stand-alone player. Information appliances aren't like refrigerators and washing machines.) At that price, every middle class family will go to their neighborhood discount appliance store and buy one—for the children, for their education. Without question that will happen. *Millions* of these multimedia computers will be in homes. Now, \$250 isn't all *that* disposable, so parents are going to make sure their children do use the new information appliances for educational purposes by pushing the schools to integrate them into the curriculum. How will we really know that information technology has finally made a major impact in the classroom? When school lunch boxes come with a CD/computer pouch as standard equipment.

(Ok, so it's really Christmas, 1994.)

**From Elvis's Hips to Madonna's Lips**

First Texas says that videodisks are equivalent to textbooks and now the U.S. Labor Department is arguing that thinking skills, of the sort fostered by playing with Nintendo, need to be taught and learned. (See Figure 6 for the list of skills. Now, what *should* that school icon do if it were clickable?). But where does it say that I have to know what the rate of a falling body is? Should I know it?

Change is surely the theme of the 1990s. And computers are right up there, fueling those transformations. In education, there is a flurry of activity among local school districts to pass bond issues to support multimillion dollar investments in technology for classrooms. How will that money get spent? Make no mistake, high-ticket experiments with multimedia technologies are going to carried be out, e.g., broadcasting lectures, news, and *advertise-*

*ments* via TV into the classroom. What do you want for your neighborhood?

During the 1960s did your parents like the Beatles? Do they like the music of the Beatles any more now? So, it is not clear that we are even supposed to be enamored of Public Enemy (Britain, of Community High School's favorite group and for me, not tolerable to the ear), nor enamored of this highly energetic push toward the use of multimedia technology in education. Well, while the Perry Como generation grouched and rpoaned, they nonetheless did support the flowering of the Beatles Generation and thus, by generational transitivity, the Beatles Generation owes similar respect and support to the Nintendo Generation. ☐

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