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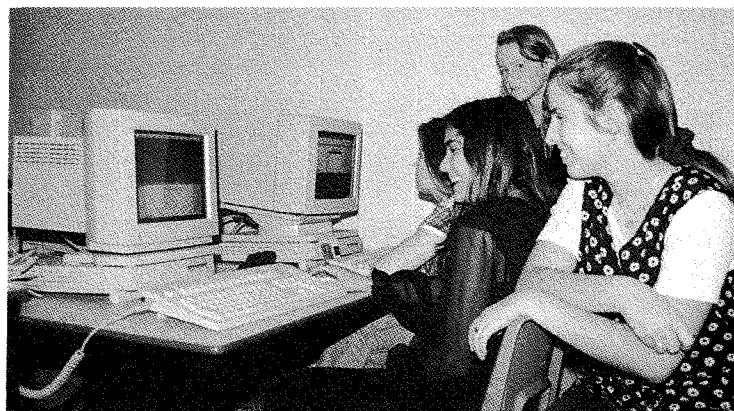
THE VIRTUAL CLASSROOM



THE VIRTUAL CLASSROOM

Redefining Learning Beyond the Four Walls

by Grace Visconti



If I walk into the classroom twenty minutes late and my students are working on their projects, then I know I've done my job," said Brian Alger, a teacher from River Oaks Elementary school in Oakville, Ontario.

This isn't an ordinary school. In 1986, the principal, Jerry Smith, decided to restructure the curriculum for the information age. The stage hasn't changed but the players and the props are different. If you can change the curriculum to develop children into independent thinkers and self-directed creators then everything else is really superficial. Knowledge is power, and Jerry Smith considers students knowledge workers within a technologi-

cally equipped classroom touted as a toolbox for kids. Here, they can pick up different strategies and techniques to enhance their strengths rather than putting band-aids on their weaknesses. This is where Brian's role of the teacher is challenged. His task is to make that as rich a toolbox as possible. In challenging the limitations of the educational paradigm, the very structure of the teacher-student relationship becomes a changing, moving picture.

The four walls of the classroom are gone and these kids are literally reaching out into the world, added Brian and the teacher is placed to the side as a facilitator. As our way of perceiving and experiencing changes, so does our understanding of the creative





process. They're interdependent. Computers allow us to think and create as fast as we can move within an information environment, and that is all. In fact, they're useless without a strong set of thinking skills behind them. Beyond this, if we were going to develop the kind of leadership potential to compete in the global market, learning has to be innovative in its continuity. So, how does a teacher in this very challenging role today make this happen?

Brian models the first stage of his instruction after the model of educator Edward De Bono. By using the concept that learning is a combined effort of logical and creative thinking, he starts his Grade eight class with a theme and essential learning which relate to the theme. In addition, strands of information skills are incorporated into the curriculum. This gives the students relevant and interesting content to work with. Once this foundation is set, they move into creative applications which are student-initiated self-directed inquiries. The student is placed in the forefront and the teacher is at the side. Information accessing skills can be developed with the electronic encyclopedia. Using models to help students see the information in a different way is crucial to the thinking process. Gone are the old days when a research project was done by copying information from encyclopedias and then giving the resulting paper back to the teacher without the student having the ability to talk in depth about what was "studied". Ideally, with a more exploratory approach, low level thinking skills (copying, rote memorization) are replaced with a much broader understanding in the form of a model, illustrated in one case with a cross classification chart (see illustration, pp20). The students' objective was to analyze three articles from National Geographic Magazine. Each article focussed on a different member of the animal kingdom. Students listed animals in three rows down the side. The columns across the top dealt with key concepts like system, model, relationship, diversity, characteristics, change, energy and pattern. Brian is training students to use this kind of analysis as a perceptual filter so when they go to the information, they don't regurgitate it back. Instead, they look for systems and connections. When they start comparing, then they have a topic for an essay.

Adding value to information essentially means seeing it in a new way or an original way for that individual. As long as the students are the ones who went through the thinking process to give it that new perspective, then they have achieved some genuine understanding. This is the key, insisted Brian. In the second stage of this thinking process, they are taught how to write an abstract and topic outlines. This gets them involved in the information so they can understand it.

The third and final stage is where the creative process is exercised. At this level, they make their topic outlines with their point

form notes but they start reshaping the information in different ways. The result is to emerge with a new perspective on the information or find ways of comparing three very dissimilar animals. Communication is where technology becomes important. By processing this information, students have a choice of using word processing, hypercard, and desktop publishing. Using pictures as a tool is more powerful than word processing. When you go beyond that, you get into the world of interactive media which cannot be reproduced on paper. The possibilities are enormous. Students have the ability to trace an idea through an information environment. There is logic built into the environment, and a diagram may help visualize the logic better. Lateral thinking is involved in this process. One of Brian's students referred to this as a three dimensional spider web where you can access related ideas at any time. However, Brian cautions there should be depth of understanding at the heart of this activity.

If you think about what it takes to create an environment like that, it involves a substantial amount of higher level thinking skills that go beyond word processing and desktop publishing. Evaluation, analysis, synthesis are key components in creating an effective, interactive environment. Unless those skills are taught, you'll get shallow glitzy, entertainment without much real content.

The multimedia process allows the greatest synthesis for communicating ideas with the integration of text, graphics, sound, animation, simulation, music and film production.

"Integrated" takes on a new meaning because if you're creating a multimedia environment, you're dealing a wide range of information. Sound engineering, music, production, graphics, design, language and authoring are all processes the student will deal with. That's really powerful.

This process of integration is not only a challenge for the student, but it has forced the teacher into a learning role as well, which in Brian's view is what a teacher should be anyway. Beyond the four walls of the classroom, information is literally connecting the world through technology. Is there a danger in this new world? The danger lies in the consciousness and responsibility of the user. Will remote networked technology eventually replace schools as learning centers? Perhaps the nature of the school day will change but there may always be a need to come together and talk. Teachers may be seen more as orchestrators for the learning experiences of students.

There are so many realms of learning that the computers don't even begin to approach. We need human interaction for personal growth, Brian insists. "I never see the need for teachers going away. If it does, then I think we're doing something wrong."

The three dimensional spider web metaphor goes even beyond

Cross Classification Chart									
		System	Model	Relationship	Diversity	Characteristics	Change	Energy	Pattern
WHALE	Animal #1	•Digestive system •hunting •life cycle •reproductive •circulatory	•Graphics •Chart pictures graphs, 3-D •sketches •biology tracks	•Things in common 1) Human kind •hunting •pollution •confinement	•Different kinds of varieties	Features Behaviour Environment -land -water -air	•history •life-cycle •endangered species •adaptation •past, present, future	•movement •conserve •food •production	•hunting •life cycle •migration •reproduction •behavioural •food chain
LION	Animal #2	•Digestive system		2) Food chain •other animals •predator •prey	Classification of animals •types •environment •food chain	•Anything that is special or unique to an animal			
EAGLE	Animal #3	•Digestive system							

Table created by students for analyzing different animal species

the four walls of the classroom. It's not important that computers are taught, but that we understand the world better. This is what technology ultimately should do or the opportunity will be squandered. If it is not put in the service of humankind so that we can understand different cultures, perspectives, ways of seeing and experiencing, then we're not truly communicating at all.

Brian explains, "I see the technology used appropriately as a peacemaking tool through understanding one another". One way to do this is through telecommunications. His class is involved with a school in Japan through telecommunications and by the end of the year, schools in the US., Europe and Australia will be part of the curriculum so that the four walls of the classroom will disappear. That's not all Brian has in store for these kids. The two impending projects in the works include the Marshall McLuhan Program in Culture and Technology and the SUMS (System for Universal Media Search) interactive multimedia database by Dr. Kim Veltman. The initial contact was Dr. Derrick De Kerckhove, the director of the McLuhan Program at the U of T.

How are we going to improve education locally and set a model that other people can benefit from on a global level? Beyond interactive media is an innovative application called Virtual Reality. The goal is to have students create environments, not just experience them because there are two ways of experiencing technology: passively or actively. With the technology that the McLuhan Program has, Brian is developing a plan with Graham

Smith, the Director of the Virtual Reality Program, that will tie this technology into solid curriculum objectives for kids. This allows them to exercise their higher level thinking skills rather than just experiencing a Virtual environment. After this, they plan to tie it into the Cyberspace Program which is video conferencing. A video phone will be installed in the school that has a direct access to the McLuhan Program and therefore, a direct access to all the Cyberspace events that they hold.

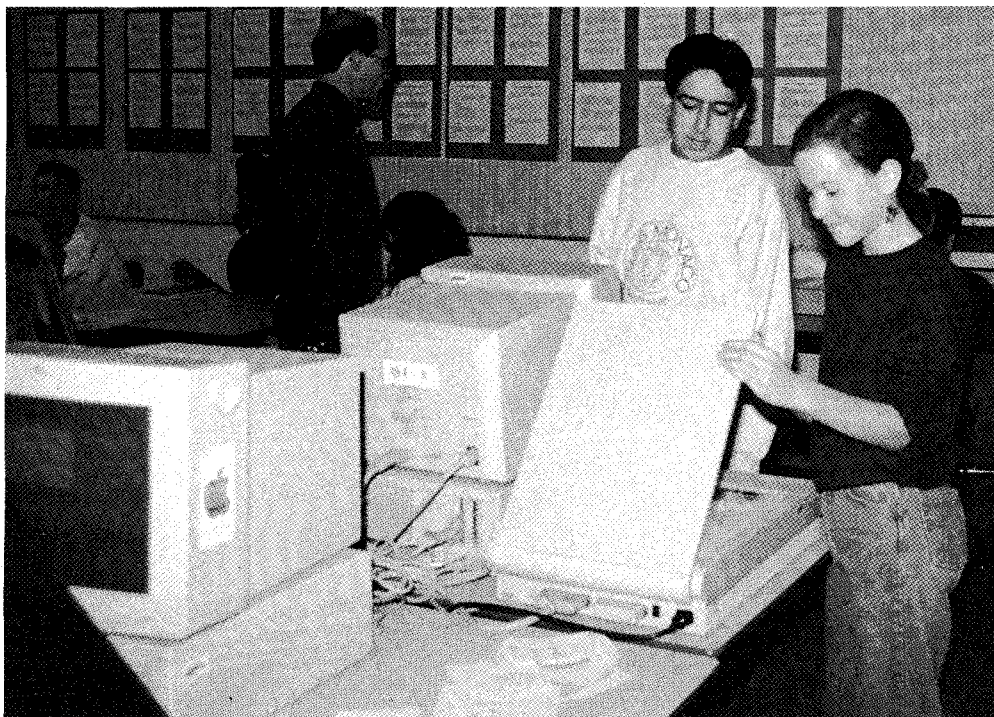
Brian adds, "One of the things Graham and I talked about was having kids in kindergarten, one, two and three right up to grade eight create a Virtual environment out of wood and plastic. They can build models and stuff like that. Maybe it's a city of the future, maybe it's Oakville. With a video phone, we can have someone in Europe explore the Virtual environment that we created here. They can explore our virtual city via one of Graham's tiny video equipped robots. What they will get is actually a different perspective of what we see. Then we can communicate back and forth with those people about the experience and what it was like. You learn a new perspective with telecommunications."

The second project involves the SUMS interactive multimedia database implemented by Dr. Kim Veltman. Dr. Veltman is developing a framework that could be used by preschool kids right up to the doctorate level for creating an environment that allows information to evolve. This is the highest level of interactivity: when the information environment actually evolves and changes as people

use it through adding things, creating new perspectives, and originating new ideas. Bringing this format to River Oaks would push it a little bit farther and transform the curriculum once again.

One might argue that if the nature of the curriculum and the technology are so interwoven, then what would happen if the power went out at River Oaks? What would change? According to Brian Alger it would not affect processing or accessing information. However, the whole area of communication would take a really big hit because the classroom walls would come back.

Brian insists that if the technology was not available, there is still a very good curriculum that serves as a model because the focus is on thinking skills, the inquiry method, the creative application of information and skills where students are taught to be in control of their learn-



ing process. They're given opportunities to do that while still building the basics which are the three Rs. And that's what makes learning at River Oaks so special. It's being allowed to move beyond one's own limitations as a student, and then beyond the knowledge of one's classmates and after that, challenging the four walls of the classroom to discover other ways of being in different areas of the world.

This is definitely in conflict with the status quo where, at the higher levels, university students will be expected to write standardized tests. For Brian, the whole University experience, excluding his Masters Degree, was a confining one, not to mention the subjectivity of the grading system. On that note, he doesn't think grades by themselves convey information about anything.

"It's basically, here's all this information. Learn it, and give it back to me on a test. So what will happen with standardized tests if that's the foundation? You teach to the tests so everybody knows the same thing. Well, is that what we want? Furthermore, is the same body of information relevant to everyone? I don't think so." What he would rather see is a model where you have a spectrum of skills, for a particular unit or strand. You can relate the students' learning and their products to that strand and say to that student you're doing this kind of thing now and in order to move on, we need to look at these kinds of things. This way, you are treating each student individually and taking into consideration their personality type. The question is which model will prepare us for life in the global market? Edward De Bono refers to following an unproductive path as "digging the same hole deeper". Is a better way of learning being promoted at River Oaks? What do the students think of this? Katie Poirier, a new student at River Oaks, is in Brian's grade eight class. She moved from Guelph this year and is thrilled to be learning on the computer.

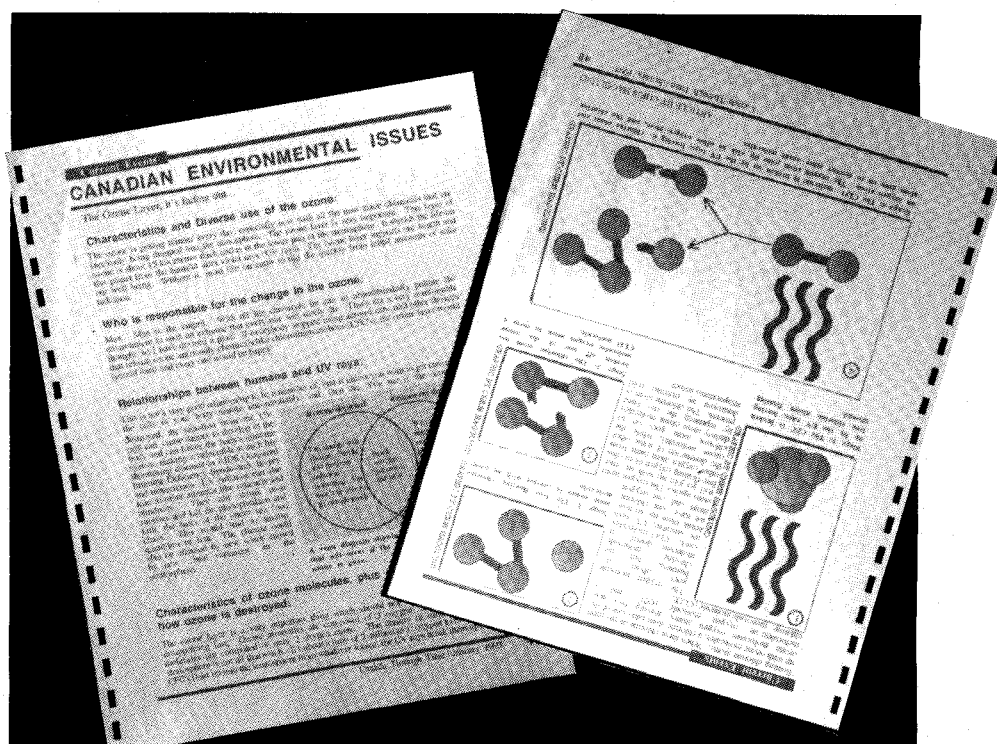
"I never knew anything about computers before but now I do. They're so much faster, and they're easier to work on and I can draw really good. I'm working on graphics for my Claris Works project. What I'm doing is painting them in so I can import them into my newspaper article. My article is on baseball, basketball and being organized. So I drew pictures and scanned them in and now I'm coloring them. We learn new things every day." Katie feels lucky to be at River Oaks as her former classmates are not as knowledgeable as she is now, and it's only September. One of her goals is to attend University where computer skills will be useful.

Another classmate, Meridith Innanen, moved from London, Ontario last year. Her former school did not have computers either so her project with Claris Works is slightly different.

She explains "We have to do personal development paragraphs on what we want to improve on this year and I said computers because I've only been at this school for a year and most of the kids in the class know a lot more than me about computers. I'd like to improve my skills."

She found her classmates to be quite helpful as they share their knowledge. A possible career path for Meridith is medicine, taking on the role of a doctor.

Beth Davidson, on the other hand, is no stranger to this school. She learned how to use Claris Works in grade five. Though some of her friends in other schools are using computers, they're not using the same programs. When asked if they were as advanced as



Examples of student-created desktop published documents

this class she replied, "Probably not."

"Computers can be fun and there's a lot of stuff you can learn," Kiana Kashef said. "Some stuff may just erase off your disk and you have to start all over again. Its happened to me a couple of times." She added that everyone in the class has a personal disk. Students save onto the hard drive as well, in case their disks get trashed.

Chad Russell zoomed into his basketball illustration as he said, "Im coloring in all the white spots 'cause when I scanned it, it didn't scan very well." Though he learned to scan illustrations in grade seven, he admitted that he'd never done an assignment like the one in Brian's class. When asked if he was happy at this school he replied, "Yeah, I like this school. Im learning a lot."

Brian Alger admits that by the end of the year, he wants the students to be completely fluent in producing interactive media environments which include multimedia and hypermedia. The focus is less on high tech, though, than on thinking and creative skills.

"Ideally, what I want to try to get them to do is to create an environment that evolves. I'm still working on that one in my head. I've got some ideas for it so that the work we do this year can grow the following year through other students using it. I would like to see the school as a whole become a knowledge-generating community rather than a knowledge absorbing community because to generate knowledge you have to first absorb it. Generating ideas is a much higher-level thing to do than absorbing them."

Redefining education allows us the choice of alternative cognitive experience. With the increased availability of information-technology, lateral thinking has become easier, enabling us to broaden our minds to embrace various possibilities. It helps encourage the right to creative freedom. How we relate to ideas and experience as we change our present hierarchical structure in education is the basis of fundamental change.

Jerry Smith, the principal of River Oaks concludes, "One of our teachers commented that the only constant in the world is change and if it wasn't that way, there'd be something wrong. You always have people saying when will you be there? Well, we'll never be there."

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