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SCHOOLNET

# SchoolNet

WINTER  
'99

O F F - L I N E

*SchoolNet's Magazine for the Educational Community*



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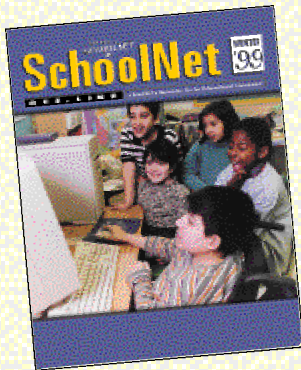
Combatting the Millennium Bug ♦ From computer neophytes to Internet creators  
Recreating historical cities in cyberspace ♦ Make your school website a sensation

# SchoolNet

WINTER  
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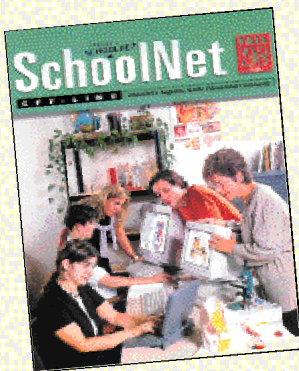
O F F - L I N E

*SchoolNet's Magazine for the Educational Community*



## *Here this Winter*

*SchoolNet Off-Line Magazine* is a high quality publication--the first of its kind--dedicated to the application of the Internet for classroom-based teaching. SchoolNet's goal is to help connect all Canadian schools to the Internet by the end of fiscal year 1998-99 and to support the effective use of Information and Communications Technologies so that young Canadians develop the skills and competencies required to succeed in the knowledge-based economy. But to harness the full potential of the Information Highway in learning, teachers need the know-how. Off-Line's tight editorial focus addresses the needs of readers' special interests. It is all about teachers talking to teachers.



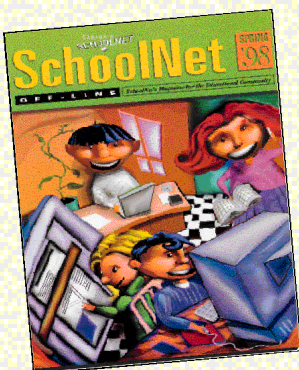
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The focus of this issue of SchoolNet Off-line is how information and communications technologies (ICT) are impacting learning.

From our vantage point at SchoolNet, we are starting to see these technologies bringing about important changes. The World Wide Web, for instance, has revolutionized how schools can access information. Multimedia in today's schools gives learners a wide range of options for processing that knowledge.

Of course, learning in a school environment equipped with all these new tools poses new challenges. On the one hand, today's average learner is a lot freer than before the ICT revolution to research and to express ideas in a personal way. With information easily retrievable, self-learning can extend to the limits of students' interests and abilities.

On the other hand, these new technologies bring new responsibilities, even dangers. For one thing, students need to develop critical thinking skills to assess all that raw information. For another, although talent goes farther when helped by technology, there are no shortcuts to developing talent. Painstaking practice still makes perfect!

That is why educators across the country are carefully discovering and testing all kinds of ways to enhance learning with newly emerging technologies. In this issue of our magazine, we bring you a cross-section of recent developments. Here are some highlights:

Melanie Seal discusses a new hands-on tool to free history students to learn better. John Bonnett, working with the National Research Council, is seeking to empower students to explore history virtually by creating and manipulating computer simulations of historical buildings.

Next, we look at two schools that have incorporated the Web and computer technologies into their delivery of the curriculum. Both are internationally recognized for their ground-breaking innovations – South Grenville High School in Prescott, Ontario, is involved in a project called TEI, headed by Cambridge University, while Le Marchant St. Thomas School in Halifax has been named an Apple Distinguished School.

The World Wide Web makes available numerous resources as new tools for learning. Jeff O'Connell profiles teacher and educational thinker Ethel Thayer's far-reaching views on how many Web-based resources may be adopted as tools to foster higher-level thinking skills and to expand creativity. Then, in her article, Allison Wale explores how the Web provides rich resources for lifelong learning in ways that frequently change lives. Next, Karen Zak asks several teachers for tips on how to develop an effective and exciting school website to promote students' work.

Look for an article on the VIPER Club, an intriguingly named GrassRoots project. Teachers Barb Scott and Joni Turville discuss how they designed their project to motivate their students to increase their reading. As well, they provide useful guidelines for teachers to ensure Internet-based, collaborative projects are a success.

But what is the effect on learning of educators embracing ICT in their classrooms? Is education losing out to Web pizzazz and the latest shiny toys? Fortunately, not! That's what I find stimulating about all the ICT work that Canada's educators are doing. Helping students learn better is the key to what drives them.

Doug Walker, Editor  
([walker.doug@ic.gc.ca](mailto:walker.doug@ic.gc.ca))



PUBLISHER

*Wili Liberman*

Editor

*Doug Walker*

Associate Editors

*Beth Clarke, Jocelyne Voisin*

Writing and Editing

*Whitehall Associates*

Contributing Writers

*Joe McKendy, Jeff O'Connell,  
Kelly Pringle, Kathryn T. Ross,  
Barb Scott, Melanie Seal, Joni Turville,  
Allison Wale, Karen Zak*

Project Co-ordinator

*Lyne Martin*

Art Director

*Vinicio Scarci*

Advertising Manager

*Catherine P. Lenihan*

SchoolNet Off-Line Magazine is published by Industry Canada/SchoolNet and Quadrant Educational Media Services Inc., Publisher of TEACH Magazine.

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ISSN: 1206-0062

For more information, please contact Quadrant Educational Media Services Inc., 258 Wallace Ave., Ste. 206, Toronto, On M6P 3M9, Ph: 416-537-2103, Fax: 416-537-3491, email: [teachmag@istar.ca](mailto:teachmag@istar.ca). To contact SchoolNet, call 1-800-268-6608. Visit the web site at [www.schoolnet.ca](http://www.schoolnet.ca) and [www.schoolnet.ca/info/magazine](http://www.schoolnet.ca/info/magazine).





For some, retirement is a chance to relax and play golf. But, for retired Ontario teacher Ethel Thayer, retirement means focussing her energies on something in which she believes strongly: advancing the learning potential of young people through information and communications technologies (ICT).

On an early October morning, after returning from a five-mile power walk, Thayer explained why ICT should be part of the learning process by citing educational theorist Benjamin Bloom.

**“I**n 1956, Bloom wrote what is now known as Bloom’s Taxonomy, a hierarchical chart that describes how humans learn. Bloom believed that there are two levels of thinking involved in learning: lower order thinking skills (LOTS) and higher order thinking skills (HOTS).”

With LOTS, people are first exposed to information (often given to them by an educator), then they attempt to comprehend it, and finally they apply the knowledge they have learned (often through testing).

“Traditionally, most children learned using their LOTS — that is, teachers presented information on a strict set of material, and then students were made to memorize and regurgitate it.”

This type of learning involves a great deal of what Thayer calls “busy work” for the students, but the process limits students because it restricts both their creativity and their personal attachment to the material. Because students are simply given material and forced to work with it in a certain way, the outcomes of their activity are preset, and their creativity is limited. As well, they may become disinterested and unmotivated, because they cannot find an aspect of the work that corresponds to their personal experience and interests.

According to Thayer, the first stage in an individual’s experience with HOTS happens when they analyze a variety of information, much of which they gather themselves. Next, they creatively develop the information (in a process Bloom called synthesis), and, following this, they think critically to determine which of the many possible outcomes they’ve realized are most favourable given their objective

# The HOTTEST way to learn

by Jeff O’Connell



Stock photos provided by Quadrant Educational Media Services Inc.

(Bloom called this final stage evaluation).

In contrast to students using LOTS, Thayer says, students who use their HOTS “learn how to learn.” Each of the three stages of HOTS — analysis, synthesis, and evaluation — helps learners develop skills that are not utilized in LOTS-based learning.

▲ Allowing young learners to retrieve a wide variety of information and then to search for the most relevant data, teaches students to determine both the quality of information and a variety of useful ways to gather it.

▲ Because students are allowed to develop the information they’ve uncovered using their own interpretative skills, young people’s thinking processes are fostered. Rather than simply memorizing data that have no meaning to them,

HOTS allow learners to develop the data they’ve collected in a variety of creative ways.

▲ While LOTS forces students to narrow the possibilities and accept one answer, the divergent and lateral thinking techniques of HOTS expand the possibilities of a problem beyond the obvious. With the more open-ended learning that ICT-based projects promote, students can broaden the possibilities by asking questions such as “What if?” to find out if there is another, possibly better, way to accomplish their goal.

▲ Finally, through evaluation techniques such as self-evaluation, peer-evaluation and teacher-evaluation, young people can not only determine the usefulness and validity of their work, but they can also learn critical thinking skills and expand their thinking for future projects.

## How ICT can heat up education

Thayer further divides Bloom’s three stages of HOTS into the four categories of a learning experience — content, process, product and evaluation — to make it easier to understand exactly how HOTS are developed with ICT.

*Content* is found by using ICT to access information storage areas such as LibraryNet or SchoolNet Digital Collections. With Internet search engines and programs such as HotBot and

PointCast, the student can collect general or specific information on a topic.

Because the Internet is an unrivalled compendium of text, statistics, sound and images, granting children use of the Internet gives them access to virtually unlimited, constantly updated information on every topic imaginable.

Students *process* information by analyzing spreadsheets, graphs and text that they have collected. Through creative development of this information, using techniques such as visualization, students are able to decide their own strategies for problem solving.

Thayer cites the Canadian Marsville project (<http://www.enoreo.on.ca/mars98/>) and Colorful Mathematics (<http://www.math.ucalgary.ca/~laf/colorful/colorful.html>) as examples of ICT projects that foster these advanced thinking techniques.

The *product* stage sees students create a new resource based on the results of the work in the first two stages. These products, whether they are websites, CD-ROMS, videotapes, diskettes, computer models, simulations, multimedia presentations or more traditional items such as posters or reports, demonstrate the students' learning.

*Evaluation* helps students discover what they have taken away from the project.

In cases in which a deliverable product was created, self-, peer- and teacher-evaluation can be supplemented by thorough product testing. By evaluating in this manner, Thayer says, students can realize "what they've really learned" because they get advice on what could be done in the future to aid success, rather than simply receiving a numerical mark with Xs denoting incorrect answers.

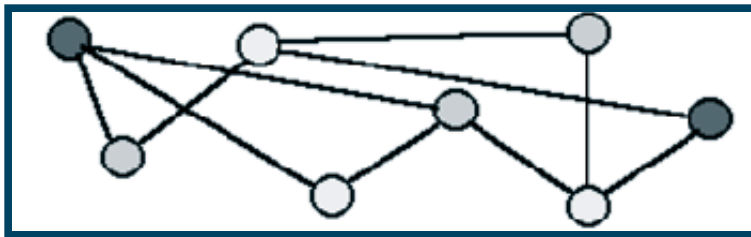
### Other advantages of using ICT

Thayer says that there are several advantages to using ICT in learning besides the positive change it creates in students' ability to think independently. She points out that because document preparation, once limited to pencil and paper, can now be carried out on high-resolution colour printers, the quality of every student's work can improve. Also, document-creation software's spelling- and grammar-checking features aid learning disabled students.

She continues: "ICT makes it possible for learners and teachers to become expert communicators through technology such as E-mail,



Colorful Mathematics: The Four Color Map Problem Game.



Colorful Mathematics: The Chromatic Number of a Graph Game.

MOOs, and computer and video conferencing. Now, students can instantaneously communicate with fellow students further away — often, on the other side of the world — about study topics."

"As well, teachers will find that by empowering their students,

they can establish a new and dynamic classroom environment." Thayer strongly believes that many traditional techniques force students to learn through drill and repetition. These techniques may work for some students and leave others severely disadvantaged.

ICT-assisted learning extends students' world by providing access to more content, enriches their learning by allowing them to think in non-traditional ways, and ensures they progress by way of comprehensive reinforcement and remediation. According to Thayer these are the biggest advantages of ICT-assisted learning: it takes into account the most important tenet in education — that every student learns in a different way.

The evidence shows that, if used properly, ICT can enable today's students to expand their learning potential incredibly. Cases such as the TREE (Technology Rich Education Environments) program in Illinois, in which specially trained teachers taught a group of students using ICT, have proven that students who are exposed to ICT-

based learning can learn faster, retain more information and expand their repertoire of learning techniques.

Even the youngest students are demonstrating an amazing grasp of the opportunities ICT creates. A student in the TREE program pointed out that the Internet "allows [us access to] current, accurate information for reports. If an unknown disease killed a dolphin, there will be a website up within 24 to 48 hours. It would take a year to publish a book!"

In total contrast to learning with LOTS, ICT-assisted learning not only improves a learner's decision-making, problem-solving and communication skills, but also their interpersonal skills. Students often work together when using ICT, and by virtue of this increased collaboration, students must constantly involve themselves in a social activity.

ICT does all of the above because it engages the learner. By empowering students to take ownership of their "product," ICT-based projects change the school environment from a LOTS-based teaching culture to a HOTS-based learning culture.

Thayer points to the SchoolNet GrassRoots program as an example of how ICT-based projects promote ownership through use of HOTS. With GrassRoots, even though the projects are teacher-supervised, the students are responsible for the innovation and hard work that goes into each; they have taken ownership of their learning. These projects allow learners to acquire transferable skills that can be used in other areas of study and in their lives outside of the classroom.

It seems that properly directed use of ICT allows students to develop their HOTS while simultaneously promoting the most necessary skill for the new economy: lifelong learning. As Thayer points out, "What is known may change over time, but the skills necessary to acquire, understand, and use what is known will endure."

Use of the Internet in education promises wonderful things: a generation of students who have grown up with their individual

needs, skills and interests taken into account — who have learned, and now think, in an entirely new way. To ensure this happens, Thayer's advice to educators is that they make the Internet a big part of their own lives. "It is up to educators to discover and implement the Internet's potential as a tool and strategy for learning, and to use it to help create a new generation of flexible, resourceful and adaptive thinkers and learners."

*Jeff O'Connell is a student at Mount Saint Vincent University in Halifax on special assignment with Canada's SchoolNet.*

### References

The GrassRoots Program: <http://www.schoolnet.ca/grassroots>

SchoolNet Digital Collections:

<http://www.schoolnet.ca/collections>



**High school  
students connect  
to on-line work  
experience**

High school students in rural and remote communities across Canada can now take advantage of a opportunity to gain skills in the rapid-growth area of information technology.

Industry Canada's Community Access Program (CAP) has formed a partnership with the Career, Co-operative and Work Education Association of Canada (CCWEAC) to place students from co-operative education, career preparation and work experience programs with CAP's community-based Internet access sites.

For information about this initiative, as well as on CCWEAC and its member organizations, visit the CCWEAC website (<http://cap.unb.ca/ccweac>) or send an E-mail to [c-support@unb.ca](mailto:c-support@unb.ca). For more information on CAP, visit <http://cap.unb.ca>, send an E-mail to [comaccess@ic.gc.ca](mailto:comaccess@ic.gc.ca) or call 1-800-268-6608.



## Combating the Millennium Bug

The Year 2000 problem, or "millennium bug," could cause computers and related equipment to malfunction or miscalculate. The potential scope of the problem is enormous — almost every aspect of our lives is touched by date-sensitive electronic equipment.

CAN2K is a national campaign initiated by Industry Canada to encourage Canadians to respond to this challenge. The program has developed the Virtual Toolkit, in partnership with the private sector, to help schools, libraries, volunteer organizations, businesses and local governments prepare plans for 2000.

For more information go to <http://www.can2k.com>



**O**ur main goal as educators is to increase the knowledge of our students. We have found that collaborative projects using Information Communications Technology are a powerful way to accomplish this goal.

We first used computers in the classroom to motivate children to practice many tedious skills. There were some good software programs that encouraged children to think and create, but they were like having a good worksheet. The main difference was that the children were more motivated to work on the computer than on a worksheet.

Word processing made it easier for the children to edit so they ended up with a more polished product.

### A VIPER is born

We then decided to venture into on-line, collaborative projects. The real-time projects that we have taken part in over the last few years have been excellent learning vehicles for our students. The idea for our latest classroom-based Internet project came about when we were thinking of a way to encourage our Grade 3 students to read more at home.

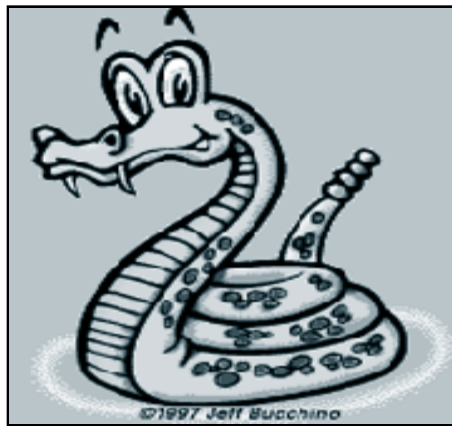
We had been involved in participating in and organizing Internet projects before, so we came up with the notion of using our old method of recording reading minutes with a new idea of asking other schools to do the same, and we could share the information monthly on a website.

Our project's objectives were to encourage our Grade 4 students to read, learn world geography and mapping skills in a meaningful context and to provide real-time experiences in data management. The project would allow them to communicate with others, and to see that other children in the world were doing many of the same things that they were.

This was the birth of the VIPER (Very Important People Enjoy Reading) Club. We discussed how to organize the project and decided on the following process:

## From computer neophytes to Internet creators

by Barb Scott and Joni Turville



- 1 We put a call to participate on the SchoolNet listserv as well as other educational lists.
- 2 We E-mailed participating teachers details and sent sample recording sheets for their reading times, as well as an information page for parents.
- 3 We designed a website to inform participants and other interested people about the data.
- 4 Participants E-mailed their data monthly.
- 5 Our class ranked and graphed the average minutes read per student in each participating class.
- 6 We placed the results on the VIPER website each month.

Every month the children would add up their reading minutes and divide the total by the number of children in the class. They would also take the reading minutes from all the participants and, using a spreadsheet program, create a graph of the results. Both

these activities led to meaningful classroom discussions, which helped them grasp the concept of averaging.

We felt that we also accomplished our goal of getting students to read. Competition can be a powerful motivator and many classes showed an increase in reading during the project. We learned a great deal about managing this project and about website design, so we think it will be even better when we run it again this year.

For more information, or to join us, check out our website site at <http://www.pschools.st-albert.ab.ca/schools/rhem/viperdefault.htm>

Barb Scott and Joni Turville teach at Ronald Harvey Elementary School in St. Albert, Alberta.

### Top tips for planning a classroom-based Internet project

- 1 If you're new to on-line collaborative projects, begin by participating in an established project. You can learn a great deal by studying its design and by corresponding with the project leader.
- 2 There are many excellent on-line resources for planning projects: SchoolNet Grassroots (<http://www.schoolnet.ca/grassroots>) and the Telus Learning Connection (<http://www2.Learn.ca>).
- 3 Participate in educational listservs or newsgroups. This is an excellent way to share ideas and be informed about upcoming projects.
- 4 Design your project so that its successful completion doesn't depend on participation from every classroom. Technical and other difficulties often arise.
- 5 Plan a reasonable timeline. Check out similar projects that are running to get an idea about reasonable timelines. If you are required to submit a report, leave enough time to reflect and analyze results before the report is due.



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# Recreating historical cities in cyberspace

by *Melanie Seal*

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**W**hen John Bonnett's current information and communications technologies project is finished — four or five years from now when the Internet can handle more bandwidth — students will be able to take a walk down a virtual version of Ottawa's Sparks Street as it was in the pre-Confederation era, a walk that will help them gain a greater understanding of what life was like more than 100 years ago.

"There's definitely an immersive side to it. Imagine what these streets were like, the activity on them. Imagine what these city streets smelled like. That's what I want students to learn," Bonnett explains.

Working with the National Research Council, Bonnett is creating an education kit that will allow high school history students to recreate historic buildings in virtual space. The kit will include simple instructions on how to use drafting software to make three-dimensional computer models.

## Turning students into historians

But Bonnett is not going to spoon-feed information to students. When they start building their historic cities, they will have to dig around and find information from old

architectural plans, drawings, photographs, various Internet sites, libraries and archives.

The project may change the way history is taught, transforming history students into historians.

"In the old education model you were told to perform a task and if you did it well you would get good grades. We need to do something different. We need to make students get the information and be the historians," he explains.

"I want them to find the evidence, to become historians rather than book readers."

As a PhD student in history at the University of Ottawa, Bonnett has heard his instructors' common complaint about first-year history students. "They don't know how to find things. They can repeat what you've told them in a wonderful essay, but they don't know how to go and get the information themselves," Bonnett says.

## The role of information and communications technologies

It was in his seminars with the university's Chad Gaffield that Bonnett realized the role computers and the virtual world can play when teaching history, and putting the

pieces of a research puzzle together. "Gaffield constantly emphasized how vital it was for historians not only to exploit the power of the computer, but also to find innovative ways to do so," Bonnett explains.

So he pitched an idea: why not help students learn by asking them to create a virtual city out of a historic one? Students who would normally be put off by having to read about history in a textbook would be able to experience it in virtual space.

Someday, he explains, students will be able to wear virtual reality headgear and gloves to see and feel what it was like to walk down a city street in the 19th century. But Bonnett is realistic; it won't likely happen until the next millennium.

## Phase one: Ottawa's Sparks Street

For now, he has to concentrate on creating the first virtual building on his first virtual city block — Elgin and O'Connor streets in Ottawa.

As Bonnett talks, a computer-generated image of a building rotates on the screen in front of him. Behind him on a light table lie pictures of the Four Corners building on Sparks Street. He found some of the pictures from the National Archives; some

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were taken more recently. But Bonnett also discovered what the building was made of through fire insurance maps and blue prints.

One challenge he faced in recreating the virtual Four Corners building was to find out its original colour. Because the building still exists, Bonnett was able to do some on-site physical research.

But he won't be able to do that to the building that was beside the Four Corners in 1875. It has been torn down. So, Bonnett explains, he'll have to use critical thinking skills and compare it to other buildings in the area to find out what colour it was.

"What building materials were used in that time period? What was the preferred colour for buildings? Teaching students critical thinking, daring them to make a guess, is an important part of teaching history also. When you're making any kind of historical replica, the information you have may be incomplete at best. The best guess given is sometimes what is involved in historical research," Bonnett says.

The virtual Four Corners on his screen has only three walls. He'll have to start thinking about buildings of the late 19th century to imagine what the fourth wall, now torn down and rebuilt differently from the original, was like.

Aware of how thrilling digging through documents and discovering parts of history can be, Bonnett wants high school students to realize that not everything about our past can be found in a textbook.

"Why tell students about the buildings in our founding cities, and what life was like in 1875, when you can ask them to recreate it? If there's a bookstore, why not ask students to think about what might be in it? What were Canadians reading in the 1870s?"

It's not just a history lesson about the founding of Canada's capital city, he explains. It's a social history lesson about Canadians, he explains. These buildings are a frame of reference for Canadian history; they tell us how Canadians lived.

The importance of Bonnett's education kit became more evident recently during recent discussion in Ottawa of plans to tear down the building and the entire city block it is on as part of a rejuvenation project. If the plan is approved, the Four Corners will remain only in Bonnett's virtual model.

The kit is not intended to replace any school's existing curriculum — Bonnett quickly points out that he has no formal teaching degree. He set out only to add to the curriculum, to recreate the past using the technology of the future. His first task: learning the technology himself.

After mastering the drafting software, Bonnett set out to recreate the Four Corners building in virtual space. On his computer, he can

recreate a city building by building, down to the most minute detail of an archway, given the information he's dug up.

### **Bringing it to the classroom**

Aware that he's plunging into uncharted virtual territory, Bonnett is conscious of the kinks he has to iron out.

He has to make the kit accessible, so that schools all over Canada can use the program.

Although he intends the program for students nation-wide, Bonnett recognizes that not all schools will have to access to Ottawa's city archives, or the National Archives. Gathering the information for students to find, and posting it on the Internet will make it easier for students in isolated areas to get at.

A teacher should also recognize that they could spend the summer gathering photos, maps and information about historic buildings. Although he placed his request through the National Research Council to the National Archives for a photo of the Four Corners, Bonnett had to wait about a month to get it.

Teaching teachers how to use the program is one of Bonnett's other goals. He has tentatively planned a summer workshop at the University of Ottawa's Institute for Canadian Studies to show teachers how to use the computer program.

But how will high school students react to becoming historians themselves, researching information to recreate a city? The task seems fascinating, but admittedly daunting.

"The goal is to make this as usable as possible," Bonnett explains. He will test his kit at Sir Wilfrid Laurier High School in Ottawa in the spring.

"They will have to learn how to draft, but with this software, the learning curve doesn't have to be that high — so it's definitely feasible," he says, confident that students will be interested to learn about history this way.

Any class could start a project rebuilding a city street in their own area, he adds. And if the class was to post their virtual city on the Internet, other students could learn about those cities too.

Imagine, Bonnett says, if classes all over the world posted historical cities. History students could become historians, helping historical researchers at all levels. In creating a city from the past, students will be helping to generate a global database of information.

Go to [http://ai.iit.nrc.ca/II\\_public/3DHistory/](http://ai.iit.nrc.ca/II_public/3DHistory/) to see pictures and an animation of the Four Corners building.

*Melanie Seal is a freelance journalist on special assignment with Canada's SchoolNet.*

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***“I want them  
to find the  
evidence, to become  
historians rather than  
book readers.”***

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## Finding direction and purpose through Youth@BC

by Allison Wale

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**T**s soon as I learned about the Youth@BC program, I knew it was how I would be spending my summer.

It all started when I heard of a job opening for an Internet Youth Trainer at the Hazelton District Public Library. For me, the experience was exhilarating and I couldn't have asked for a better way to spend July and August. I put together hour-long Internet sessions at beginner, basic and advanced levels as well as two others courses about child safety on-line, chat rooms and E-mail that included mostly hands-on training. These were accompanied by various handouts depending on the session.

My experience not only had a huge impact on me, but it also affected the lives of the many students I had trained over the summer. Although I found that the younger students learned faster than those over 25, anyone who is patient and willing can learn.

A few students stand out in my mind. I remember the look on the face of one elderly man when he realized he was using the Internet on his own. I also learned a lot from a middle-aged man diagnosed with schizophrenia. These two men really

encouraged me to pursue my teaching dream because they thought my teaching techniques were very effective and informative. Another student I trained was a staff member of the Hazelton District Public Library, Ruth Cooper. She and I both particularly enjoyed the chat room session we had.

I would like to thank everyone possible for making the Youth@BC program a great success, especially the Youth Options BC program of the Premier's Youth Office and

<http://hp.bccna.bc.ca/Library/Hazelton/>

The impact technology has had on me as a student and trainer has been somewhat overwhelming. Being a Youth@BC participant has really given me the opportunity to do what has always been natural to me: to take the lead and learn as I go along, to be in control yet still be at the mercy of my students, and to help people learn whatever it was they desire to know. There are no words I can think of to describe the overall feeling of confidence that I now possess in every-



### The Hazelton Buzz

SchoolNet. Without their support, none of this would have been possible. Working with the Hazelton library staff in particular made the job both memorable and enjoyable. My co-worker for the summer, Jaclyn Smith, who helped develop our website, had a baby girl on the last day of work!

For those of you interested in our site, check out the Hazelton Buzz at

thing I do. I think the slogan developed by the program's participants says it all: Youth@BC...because we can.

*Allison Wale is a young Gixsan woman from the Gitanmaax Reserve near Hazelton, British Columbia.*

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# Living & learning

in a technology-enriched  
classroom

by Kelly Pringle

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**M**y school has a special program, known as the TEI (Technology Enriched Instruction) Classroom, available to students in their second year. This program, run by Cambridge University in England, allows us to learn our course material entirely on a computer, and it has produced some interesting results.

Even though the class is structured differently from the others in the school, we still receive credits in the four Grade 10 compulsory courses — math, science, English and geography — as well as credits for Communications Technology, Introduction to Computers, and two courses of our choice.

Besides learning the material for the individual courses taken in Grade 10, the TEI students build both group skills and a strong sense of independent learning. Through group projects, such as creating and displaying a newspaper, we learn research skills, creative writing skills, and time

management, as well as becoming more effective members of a group. At the same time, we learn how to use specific software and hardware, which many students feel is an extremely important aspect of the program and their future.

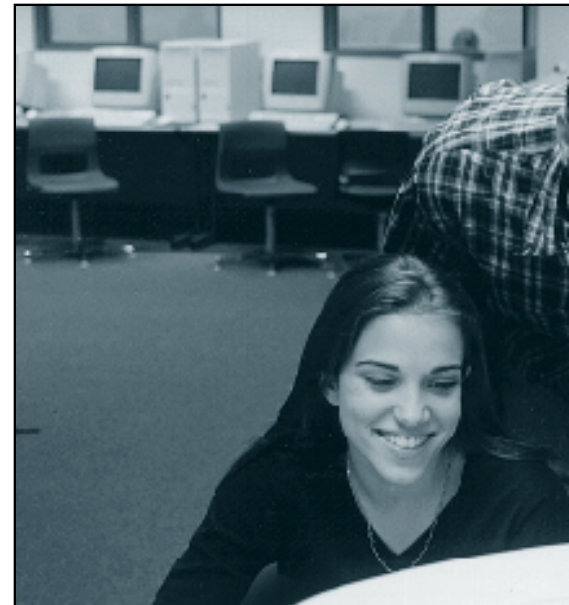
Not all of our work is done in groups. A strong emphasis is placed on self-motivation, and learning to set reasonable goals and deadlines.

“I really like that we get to work at our own individual pace,” says Lindsay Latham. Students who were already self-motivated enjoy the opportunity to manage their own time, and those who were not quickly learn to keep themselves organized and on task.

Being in a technology-enriched classroom has had an enormous impact on the way my classmates and I interact with one another. There is an increased need for us to work together, get along and respect each other.

One of the first things we did this year was spend a full day learning to use each of

the various pieces of software we would need to be comfortable with to do the projects assigned throughout the year. Along with the basics such as word processing and electronic spreadsheets, we also had the opportunity to use video cameras, digital







cameras and audio equipment. Each student then chose the item they were most interested in, and became the “classroom expert,” a resource for all the other students in the class. We help each other when we have questions, and teach each other to



use the technology. Through this, we gain experience as leaders, and gain a sense of accomplishment from what we have done. Everybody has different skills, and everybody has something to contribute.

One of the most important things that this kind of a classroom environment does is encourage students to enjoy school. Even the physical layout of the classroom makes it a more enjoyable place to spend the day. Our 25 computers are arranged into four groups, with the computers set up in a circle facing outward. Instead of ordinary classroom chairs, each student has an office-style chair on wheels. The room is air conditioned. In general, it is a pleasant room to be in, and the student-friendly atmosphere encourages people to produce better work.

In addition to the classroom itself, there is a different level of interaction between the teachers and the students. Instead of having teachers stand and dictate lessons, the more common approach is for the students to be given a list of resources (Internet addresses, etc.) in which the information they need can be found. The teachers are available to answer questions and help out, and many times a teacher and a student will sit down together to solve a problem. The teachers have to adapt their teaching methods to accommodate the different tools and materials that are used in the classroom. Many times, the various subjects are integrated, so standard lessons and projects just don't work. Everything we learn has to be prepared in a way that will make use of the software and skills that are available in our classroom. Above all, the teachers need to be flexible.

Overall, the TEI experience is viewed as a positive one by the students who participate. They feel that it is preparing them well for their future.

“I like it that we are on the computer and learn more about it. In the future we're going to need to know that stuff,” says Nicole Bangma.

The approachability of the teachers is another thing the students like about the class. Krista Bernard says that she likes the fact that “we get to know our teachers a lot better and they get to know us better too.”

One of the most interesting things to observe from being in a technology-enriched classroom is that even though there are Basic, General, and Advanced students in one classroom, it seems as though everyone is equal. In the TEI class, we do more than learn: we learn *how* to learn.

*Kelly Pringle is a student at South Grenville District High School in Prescott, Ontario.*



## Carleton journalism school a new SchoolNet partner

Ottawa's Carleton University School of Journalism and Communication has joined with SchoolNet to offer a new information service to Canadian high schools. *Capital News Online* is a virtual publication produced every two weeks by students in Carleton's bachelor and master of journalism programs.

“These are young Canadian journalists writing about topical issues of national import for a readership of young Canadians coast to coast,” says Chris Dornan, the school's director. “I hope the news-magazine will become a valuable resource for high school classes in politics, civics and media literacy.”

Check out the news at

[http://www.carleton.ca/Capital\\_News/](http://www.carleton.ca/Capital_News/)



On the right is Minister of Industry, John Manley with Bill Gates, CEO of Microsoft Corporation, Simon Witts, President of Microsoft Canada as well as Steve Mahoney, Member of Parliament for Mississauga West with students Sharon Choy, Patrick Henderson and Alexandra Terpoy from Middlebury Public School in Mississauga, Ontario.

## GrassRoots National Campaign launched with a bang

*by Jeff O'Connell*

**T**he SchoolNet's GrassRoots Program has new support from Microsoft Corporation Chairman and CEO Bill Gates.

John Manley, Canada's Minister of Industry, met Gates in Toronto on October 15, 1998 to launch the SchoolNet GrassRoots National Campaign, and to announce Microsoft Canada's role as a Founding Partner. Joining Manley and Gates were students from Ontario, Quebec (by videotaped message) and Alberta (via satellite)!

The objective of the SchoolNet GrassRoots National Campaign is to raise \$15 million from the private sector over three years to support teacher-developed on-line learning projects. It's estimated that five million students will participate in 20,000 new GrassRoots projects as a result.

"I think GrassRoots is a great example of how to help educators use technology to enable more dynamic interaction with students, parents and the connected community," said Gates.

As part of its \$1-million commitment, Microsoft will provide

teachers with funds and access to training, and make software available so they can develop their own Web-based educational content to share with teachers around the world.

"GrassRoots will contribute significantly to fulfilling our vision of making Canada the most connected nation in the world by the year 2000, and helping Canadians become the most sophisticated users of this new technology," said Manley.

It was perhaps the words of Grade 11 student Jean-René Gauthier, a student at École Marcellin-Champagnat in Iberville, Quebec, that best illustrated the potential unleashed when computers are made part of the learning process. "Two years ago, I had never touched a computer keyboard. I now have a multimedia company I started with my friend Vincent Ethier to serve local businesses."

Please visit the website at [www.schoolnet.ca/grassroots](http://www.schoolnet.ca/grassroots)

*Jeff O'Connell is a student at Mount Saint Vincent University in Halifax on special assignment with Canada's SchoolNet.*

**I**nformation and communications technologies are tools to assist in the construction and acquisition of knowledge and in skill development, and they need to be integrated into curriculum and day-to-day living. If introduced to them at an early age, children learn to locate and use information in all areas of their lives.

We envisioned, developed, negotiated and implemented Creative Connections, our school-based technology Innovation Partnership Initiative Enrichment Project for student exploration and discovery, to make the best use of appropriate computer technologies to enhance and integrate various aspects of the school curriculum to benefit student learning.

The school-wide project incorporates the development of skills and the integration of technology across the curriculum using multimedia — text, graphic arts, music, video and telecommunication links using the Internet, with emphasis on meeting the individual needs of all students including the challenged, gifted and both English and French immersion programs.

In our school, we use technology to assist in the individualization of student learning, both from a developmental and enrichment perspective. Students needing extra help can take advantage of technology to support program needs. Students requiring enrichment in particular areas can access technology as a discovery tool under the teacher's direction, but independently at the same time.

Students in all programs can be motivated and supported by teachers and peers when using technology in areas of desktop publishing, research, and project and multimedia opportunities. Students experience real purpose for writing using E-mail (keypals

## Creative Connections to the future

by Kathryn T. Ross



offer worldwide experiences, for example) and Internet inquiry. Student writing is published in many formats, which provides authoring satisfaction and pride and motivation, and Web publication is a goal this year. Reading skills are used purposefully for research and for running software applications.

Technology as a tool for learning, communication and collaboration provides an opportunity to create a student-centred learning environment that can lead to future benefits and experiences. Students of all ability levels and program areas are able to utilize technology, which provides a sense of connectedness and integration within the classroom and school in a seamless, positive way.

Students are developing collaborative and cooperative skills to think critically and strategically as they share ideas and hardware. They are developing problem-solving and risk-taking skills, while venturing into new areas and situations using technology for learning and communication. Students are valuing the access of information and realizing how it can serve purposes for them in their own lives. Students are experiencing preparation for real life as a worker in the worldwide economy — recognizing that the interconnectedness of the world is at their fingertips.

Please visit the website at

[www.ednet.ns.ca/educ/schoolpages/lemarchant](http://www.ednet.ns.ca/educ/schoolpages/lemarchant)

*Kathryn T. Ross is principal of Le Marchant St. Thomas School in Halifax, Nova Scotia. Her school is one of only 112 in North America to be designated an Apple Distinguished School.*

## A JOURNEY TO LINK A COUNTRY

Students throughout Canada have the opportunity to be part of history as they follow the progress of five bicycle teams travelling across Canada.

As the cyclists experience the culture, heritage, stories and languages of Canada, they will share those discoveries with students on the Canadian Heritage Interactive Journey (CHIJ) website.

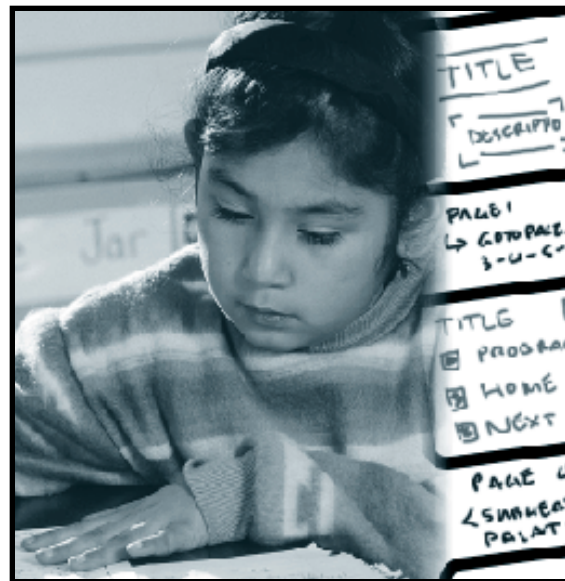


Students will have the opportunity to watch, talk and be part of the whole experience, sharing their own visions of Canada.

The CHIJ provides students with basic information and communications technology (ICT) skills, and meets social studies

outcomes across Canada. The first 800 schools to join are eligible to participate in the SchoolNet Junior GrassRoots ICT Skills Pilot Project and receive \$150 that they can use for the CHIJ. Join the adventure at <http://www.chij.com>.





# Make your school w

by Karen Zak

**“Y**ou can’t always get what you want,” croons Mick Jagger, but when it comes to building a school website, the main thing is to know what you want.

“People think you just sit in front of the computer and work,” says Dalia Naujokaitis, teacher and webmaster at St. Elizabeth School in Ottawa. “It’s not like that. That’s the last step.”

It is best to focus most of your attention on the planning, delegating, researching and writing needed for your website to emerge well. Familiarity with the HTML codes inherent in website building can give you extra flexibility in designing and administering a site, but you do not need this technical expertise to proceed, said Naujokaitis, an educational website trailblazer.

In addition to consulting someone within

the school, school board or community, you can find lots of help through search engines on the Internet or can obtain reputable authoring programs on websites such as *tucows*, which let you convert your text into HTML, cut and paste, and get graphics. With a click of the mouse, you pick a background, make a list, and decide on the flow of your list. This task will go more quickly if you make a flow chart or storyboard while planning the site.



## Keep it simple and attractive

A balanced approach is necessary. While both graphics and content are important they should not be overpowering. The site should be like the “little black

dress,” touted in fashion pages — short, simple and elegant to look at. Naujokaitis can often detect first-time webmasters because their sites look like

“Christmas trees — with all the bells and whistles.”

It’s important to maintain a consistent appearance from screen to screen to avoid confusing people, she adds.

Other ways of promoting simplicity and ease of use are to have short screens that eliminate endless scrolling for information, to use only one or two colours, and to use photographs and graphics sparingly. The more photos you have on your site, the longer it takes to bring it up on screen, and people may lose patience and go elsewhere. Nancy Desrosiers, teacher and vice-principal at Elm Street Elementary School, in Summerside, Prince Edward Island, cuts down on the time it takes to bring up photos on her school site by scanning photos and artwork at 72 dots per inch, a lower resolution than is customary.

It is also important to ensure that the site works. “You must be merciless in testing out the website,” said Naujokaitis. “Use rubrics that are available on the





# website a sensation

Internet to compare your site with the best of the Web. Enlist outside evaluators to check the site for content, design, visual appearance and relevancy of links. Then revise and fix problems.”

A website should neither look nor read like an on-line book. At E.C. Drury High School, in South Milton, Ontario, students turn to the school website for the equivalent of television “soundbites.” They want quick information. Says Mike Druiven, a computer teacher who oversees the site, “Don’t put all the information about the school’s history, demographics and courses on the front page. Just make a link to this information.” Like a table of contents, the first screen of your Web site should show people what is contained in the site, and should require few clicks.

### Know your audience

What information should be on your site? Ultimately what goes on depends on who you’re trying to reach — and why. Some

websites try to appeal to everybody. At Elm Street Elementary, the site contains links to every class, teacher and special area in the school, as well as links for famous graduates and parents’ groups. Every class showcases its work on the site resulting in interaction with other schools, proud feedback from parents, and “wonderfully motivated” students.

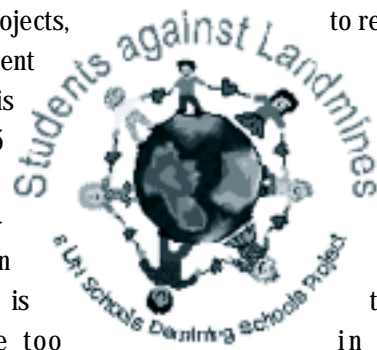
In Ottawa, Naujokaitis too showcases her students’ work and designs award-winning Internet projects, including an on-line student news magazine. Naujokaitis estimates that only 15 percent of Canadian schools showcase students’ work. “A mission statement on the school is interesting but may be too static,” she says. “Publishing on the Internet is what’s really fascinating and fulfilling for students. They’re not just learning or absorbing information. They’re

creating it, too.” For elementary students, in particular, interactive and animated features and quizzes prove a draw.

In high school, publishing student work “would not turn students’ cranks,” says Druiven. What works really well for his school is including search engines on the home page. Whenever students turn to the web browser, they automatically pull up their school’s home page where they need only enter their research subject to receive numerous listings.

Aside from publishing students’ work, teachers at St. Elizabeth School turn to the home page for a list of useful resources with links. “It’s a connection to the best library in the world,” says Dalia

Naujokaitis. Druiven would like to see his school site serve teachers better, for instance, giving them access to procedures and forms dealing with field trips.



Linked attendance records would be handy, too, enabling staff to view the overall attendance of a particular student.

While databases that teachers could share with students would be a handy feature, the security of other files would have to be considered and implemented, Druiven adds. However, this may be small potatoes



## The Internet Guide now on LibraryNet

Step-by-step instructions for using Internet research capabilities, E-mail, discussion groups and much more are now available free to public library staff.

Industry Canada's LibraryNet has contracted with the Faculty of Information Studies at the University of Toronto to provide *The Internet Guide* (TIG), a Web-based Internet skills course, to librarians through the LibraryNet website at <http://www.schoolnet.ca/in-rb>.

You must provide your name and inter-library loan symbol to register.

For more information on TIG go to [http://www.fis.utoronto.ca/conted/TIG/Demo/ or LibraryNet](http://www.fis.utoronto.ca/conted/TIG/Demo/or/LibraryNet).

in comparison to safeguarding elementary school students featured on websites. Both Elm Street Elementary and St. Elizabeth School show only fuzzy-faced photos on their sites. They do not put names next to photos and use only the first names of students in text.

In high school, publishing names is less of an issue, said Druiven. These students tend to post their names all over the Internet and like to be able to access the names and phone numbers of those organizing clubs and events, he explains.

### Making it all run smoothly

Naujokaitis from Ottawa and Desrosiers from P.E.I. feel that security and the many other issues of content and aesthetics connected to school websites, such as updating, monitoring interactive mail and sending things to the server, can only be properly administered when there is one person in control. Nevertheless, Naujokaitis believes strongly in delegating work. Her criticism of student-run sites is that "students tend to get carried away and the sites lack a consistent feel."

This has not been Druiven's experience. While he oversees the general running of his school's site, its administration is tackled by a team of four "very mature, competent and talented" students who tend to it daily. They receive input and material from other students and teachers on floppy disks or through E-mail. Then, it's just a matter of cutting and pasting. Before the site went online, a committee of teachers, students and parents met to determine what it would feature and look like.

Druiven's students spend from 5 to 15 minutes a day tending the site as does



Naujokaitis. A larger site may take more time. It's necessary that a Web site, like a daily newspaper, stay current, so it is good to change photos and graphics frequently. Even tailoring the site to the season does not take Naujokaitis long as she designed it with different seasonal looks, while Desrosiers created interactive curriculum theme activities that can be returned to year after year.

So the time you need to run a website is not excessive but what about the resources? A digital camera enables you to

transfer photos easily onto your Web page and costs from \$399 to \$1299. Scanners are good for transferring student artwork online and sell for approximately \$100 to \$400. Students at E.C. Drury High School use their own server, but Druiven prefers a central server such as one at the local school board. A server should be able to support a variety of programs.

Once you've tackled all that work, don't waste it. Direct some effort towards frequently advertising your site through school newsletters, listservers, SchoolNet's Schools Online, Web 66 and even the media. No less than CBC News covered the debut of Elm Street Elementary's website and the roars and cheers it generated from teachers.

Visit the best in Canadian school websites on SchoolNet's School Site Builders at <http://www.schoolnet.ca/builders>. Your school website could be also be featured and be eligible to win great prizes.

*Karen Zak is a freelance writer who specializes in education. She is currently on contract with TEACH magazine.*

**W**hen a parent volunteers in a school, he or she has traditionally shelved books in the library, rounded up stragglers on a field trip or served up hot bowls of soup for lunch.

While these ways of helping schools remain important, there's a new type of parent volunteer in Prince Edward Island. Under the direction of teachers, parents are being trained to use the Internet and apply it to the classroom. No experience is required.

There are as many ways to help as there are sites on the World Wide Web. Here are a few examples:

▲ introducing a teacher to a site that features a P.E.I. war veteran's collection of secretly snapped photos from the trenches

▲ making a list of the best sites on livestock, lobsters or anything else a class is exploring

▲ helping a teacher develop an Internet-based classroom project under Industry Canada's SchoolNet Grassroots program.

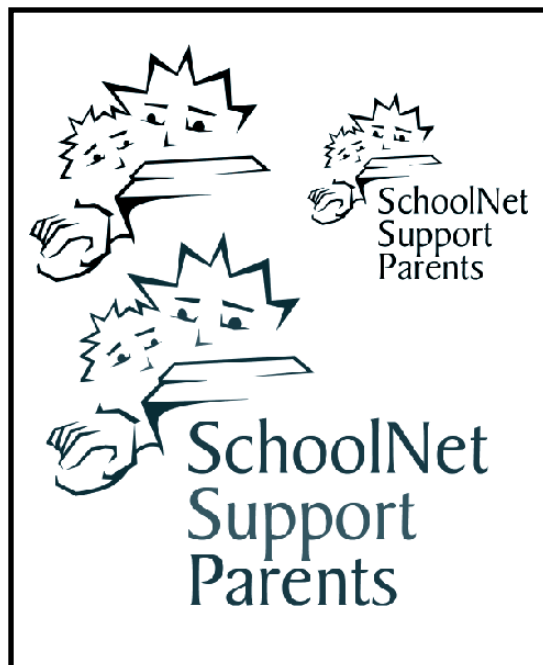
The SchoolNet Support Parents pilot project was jointly introduced in P.E.I. by Industry Canada and the P.E.I. Home and School Federation. Shirley Jay of the federation says that the program "offers parents an opportunity to develop their skills and help the school at the same time."

There may also be opportunities for some students to join parents in this volunteer effort, playing a mentor role. Four students between Grade 6 and senior high school put their knowledge of the Internet to use at training sessions for the first 56 parents in P.E.I.

The volunteers who have already received nine hours of training will train other parents in their communities, using computers at school or at Community Access Program sites. The program is very flexible, with the amount of training tailored to the needs and

## A new, high-tech role for parent volunteers in P.E.I. schools

*by Joe McKendy*



schedules of volunteers. In many cases, a couple of evenings of training would be adequate to get started.

Training and volunteer assistance to teachers will generally be offered outside of school hours. Over time, Jay hopes to develop a team of SchoolNet Support Parents for each school on the island. Although she sees a greater need for the program at the island's 46 elementary schools, Jay says that high school parents may also become involved.

SchoolNet Support Parents complements several broader federal government goals. Industry Canada's CanConnect initiative is bringing government, business, schools and others together to help young Canadians develop Internet skills and others that will help them to prepare for good jobs when the time comes. Recruiting volunteers for schools and libraries is an important part of CanConnect.

CanConnect itself fits into the broader federal strategy of Connecting Canadians, a plan to make Canada the most connected country in the world by the year 2000. The strategy was developed because the Information Highway — which includes satellites, cable TV, new wireless systems, telephones and the Internet — is giving us new ways to communicate, learn and do business. By being connected, we create jobs and economic opportunities that ensure our future prosperity.

For more information on becoming a SchoolNet Support Parent in P.E.I. or getting some help from them in your school, please contact the P.E.I. Home

and School Federation at: (902) 892-0664 or 1-800-916-0664.

*Joe McKendy is a writer and communications advisor in the Information Highway Applications Branch at Industry Canada.*



# Anytime Anywhere Learning Produces Measurable Results

Photos courtesy of  
Marshall McLuhan Catholic Secondary  
School and Trinity College School

Editorial Sponsorship

**R**ather than toting books and papers to school, an increasing number of students are carrying laptops as more schools implement portable computing tied directly to in-class instruction. Les Compagnons-de-Cartier High School in Quebec City has 128 Grade 7 and 8 students who have purchased their own Compaq notebook computers. In Toronto, Marshall McLuhan Catholic Secondary School has purchased some 90 Compaq notebooks for the purpose of implementing a "just-in-time model of delivery in education," says Michael Pautler, principal of the brand new school. Pautler calls this "technology à la cart" literally, where a cart is loaded up with notebooks and sent off to the classes that need them for a particular application or project.

In October, 1998, Compaq and Microsoft hosted the first Anytime Anywhere Learning summit that brought educators from across the country and around the world together in Toronto to explore the possibilities when incorporating the use of portable computing and looking at the impact on delivery of the curriculum. The Anytime Anywhere Learning program launched in the United States three years



ago where 60,000 students and some 500 schools are currently participating.

An independent research study, Powerful Tools for Schooling, has verified that when students have 24 hour access to laptop computers and where the computers are fully integrated into classroom instruction, benefits accrue. The study was conducted by Saul Rockman, an independent research firm based in San Francisco. It involved more than 150 teachers and 450 students in 20 schools. The results were compiled through a combination of surveys, observations, simulated problem-solving tasks and student interviews.

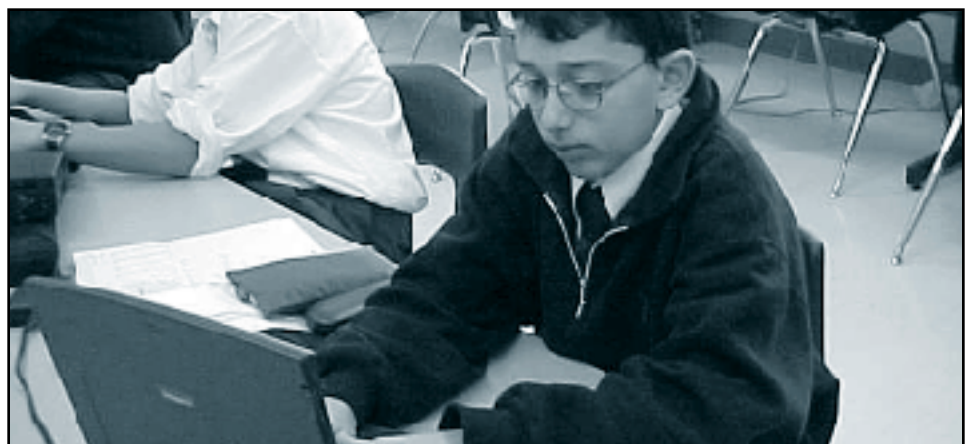
Highlights of the study are as follows:

▲ *Students applied more problem-solving and critical thinking skills*

Through the problem-solving simulations and teacher observation, students with laptops used a greater number and variety of information resources in research projects.

▲ *Learning was enhanced in core subjects and increased a passion for learning*

Students in their second year of laptop use named a project in a core academic subject area twice as often as others when asked to name a favourite project. Some 71% of teachers believe their students are highly motivated when using laptops.







▲ *Laptops lead to higher quality writing skills*

Some 87% of teachers believe this access has increased the quality of students' work.

▲ *Teachers spend more one-on-one time with students*

High school teachers whose students use laptops spent double the time consulting with individuals or small groups versus teachers without laptops in class. Overall, some 41% of teachers said they lecture less and provide double the project-based instruction as they did before having access to laptops.

In Canada, the program is still in its infancy and yet, significant signs of the impact of laptop technology are evident. The program in Quebec City is built on Microsoft Office

97 applications like Word, Excel and Powerpoint. "Providing students with access to personal computers in the classroom is a great step towards breaking down barriers to learning and opening the world to students," says Mark Miller, English Language Arts teacher at Les Chamagnons-de-Cartier. Pautler of Marshall McLuhan finds that using portable computers provides benefits that a computer lab can't. "In a lab, only one class at a time can use it," he says. "Whereas with portables, we can rotate through a number of classes, it's more effective." One reason for Pautler to send the notebooks down on carts to a classroom may involve a geography project, for example.



"Let's look at an introduction to geography where there is comparison of provinces. Students prepare a table and some graphs, then they are introduced to a spreadsheet application to analyze the data and help in the preparation of the graphs," he says, maintaining that students acquire knowledge in an application which bears a high degree of relevance to the curriculum itself.

Lest the impression of Marshall McLuhan Catholic Secondary School yields the image of its halls filled with dweebs and technonerd, the school's mandate is to deliver a broad-based liberal arts education to its students. The proviso is that information technology is the primary vehicle for delivery. Although the school opened in September, 1998 with just grade 9, it will add a grade level each year, Pautler is seeing the benefits. "It is a tremendous motivator for students," he says. The approach, "reinforces technology as a tool rather than an end in itself and that improves our ability to stretch resources to achieve the maximum impact."

The school is housed in an old building that is being renovated. Daily they are subjected to all the inconveniences of a home renovation. "The kids are going to school in a construction site," says Pautler. "There is dust and noise but they are on task and focused." Portable computing may not claim all the credit but Pautler firmly believes it is a strong factor in his students ability to keep learning amid all the distractions.

For more information about Anytime Anywhere Learning, please see the following web sites: [www.compaq.ca](http://www.compaq.ca) and [www.microsoft.com/canada/education/aal](http://www.microsoft.com/canada/education/aal)

Special pricing on Compaq notebook computers and Microsoft software is available to educators and parents. For more information, please call:

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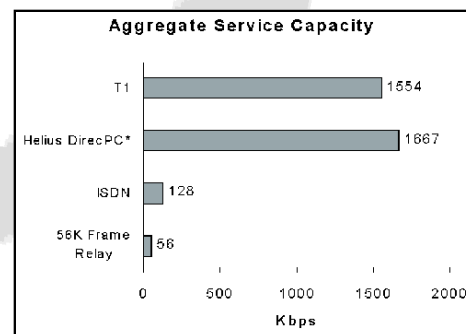
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# GrassRoots Communities ca

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*Through GrassRoots Communities @ ca:*

◆ *Canadian K-12 schools receive recognition and prizes for building websites that showcase their communities (check the website for registration deadline)*

◆ *All Canadians can submit a GrassRoots Community PostCard and sign the national guest book!*

*Come and check out the website!  
GrassRoots Communities @ ca*

<http://www.schoolnet.ca/grassroots/>

