

# **Web-Based Education: Moving into New Ground**

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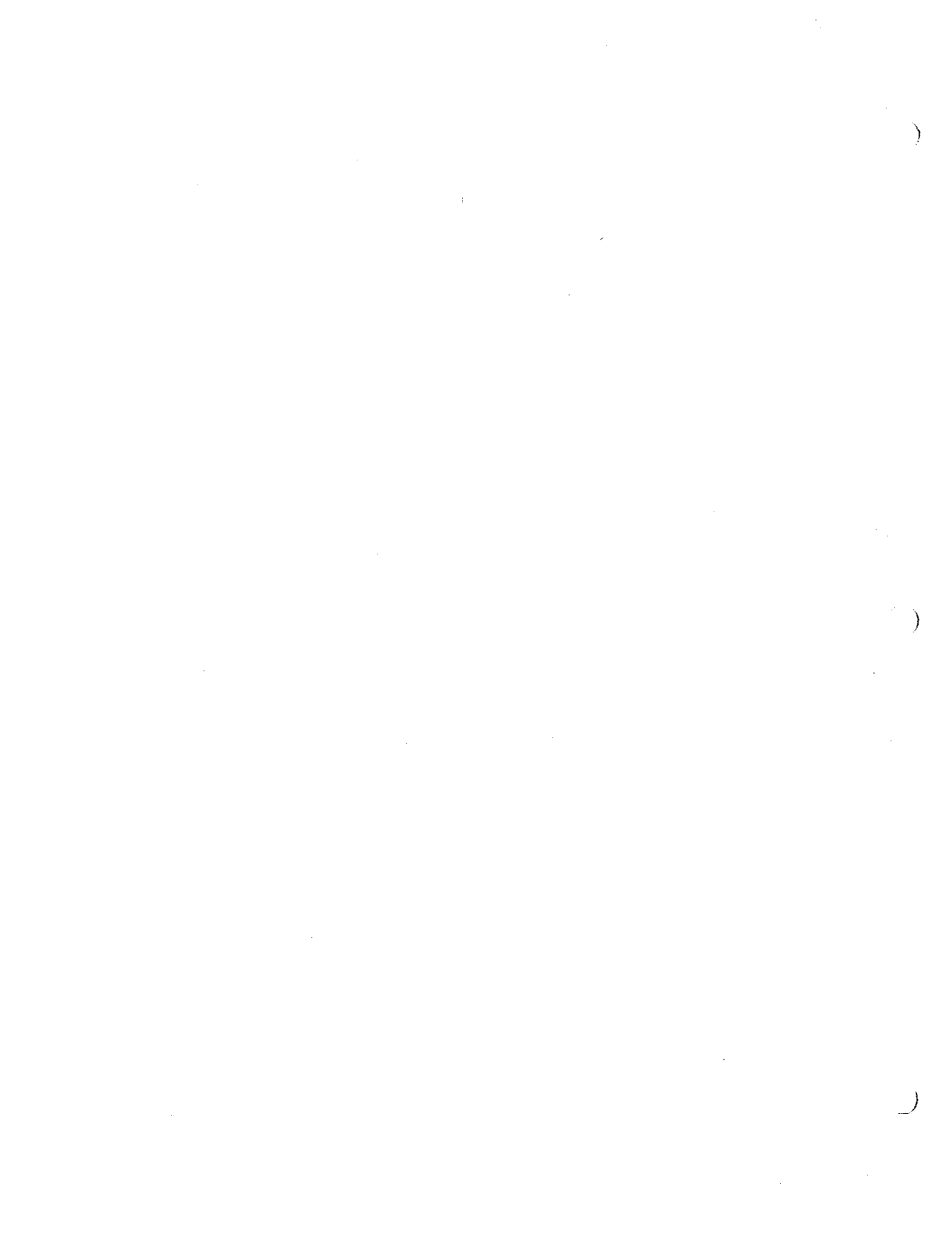
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## Web-Based Education

**Abstract:** An author-generated executive summary is available

**Keywords:** web-based education, Internet, online, World Wide Web, technology, Community Opportunity and Innovation Network, COIN, Ministry of Education and Training



# Web-Based Education: Moving Into New Grounds

Submitted For: Coin Research & Development Group

Submitted By: Jim Brisimitzis

Date: April 26, 1999

*Project #380*



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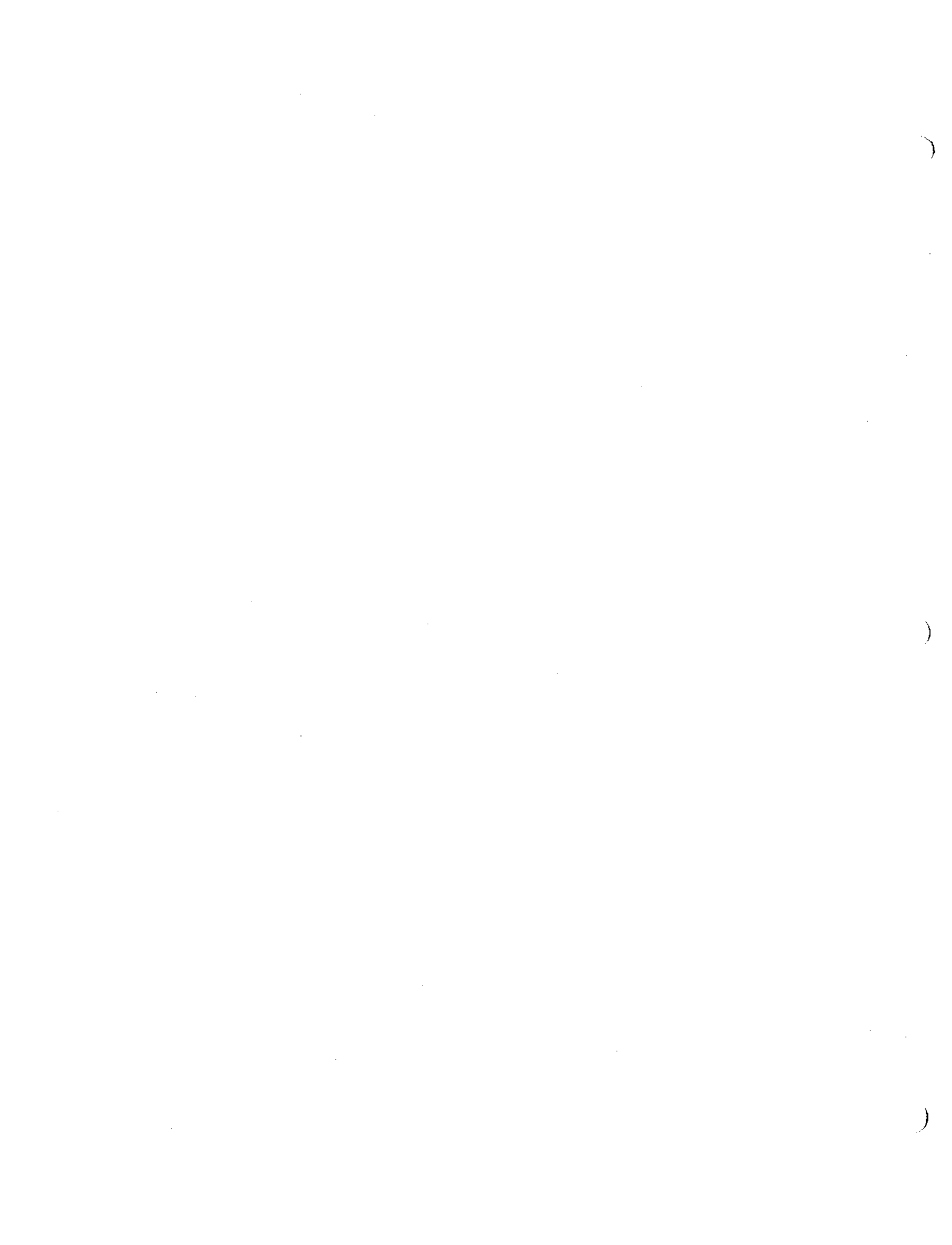
## Executive Summary

Technology and education over the last decade have become a stronger partnership, with the Internet being its vehicle. In many ways the Internet has presented itself as a useful resource tool for educators as well as a method for motivating students to learn. Since the inception of the Internet in classrooms, educators have spoken of students who are interesting the Internet as active learners. The truth of this statement holds validity because of the interest and enthusiasm the Internet creates.

It is the intention of this report to illustrate the current usage of the Internet throughout the many levels of education. The information provided in the following pages is intended to also offer some insights into future possibilities for which the C.O.I.N (Community Opportunity and Innovation Network) Research and Development committee can build on.

The information gathered thus far illustrates a strong support from private and public stakeholders to implement the Internet in classrooms. Educators from around the world are beginning to introduce technology through the Internet. As technology becomes more important in our lives so too will the importance of teaching our younger generation its methods. As the report outlines, there are many advantages to using the Internet in education. One advantage is the amount of flexibility the Internet offers students with respect to their studies. On the overall, the Internet moves students away from the tradition of retention studying and into research learning. By actively researching, students are better capable to understand what they are researching and thus gain a better knowledge.

At the conclusion of this report, I have provided a list of eight current Internet related initiatives by the Ontario Ministry of Education and Training. These examples are meant show the importance the Provincial government has put on Internet related education. Furthermore, it also serves as an indication for the future of the Internet in classrooms.



## Education and the Internet

This section is dedicated to looking at how each level of education is utilizing the Internet as a medium of learning. This information was researched from the Internet directly to provide current data. It utilizes the most current information gathered from sources in operation today. Generally, there is some commonality with regards to the Internet and distance education. Through the Internet, students of all ages and grade levels, have the interactive opportunity to learn their level of education. So far, a limitation of technology has not allowed the Internet to achieve a level comparable to in-class learning, however, there is a strong trend towards achieving this goal. In addition, support from public sector educators to supplement education received in classrooms with technology has added to the push for more technology based education. Accompanying this report are a list of eight government supported programs underway which aim at introducing technology, (the Internet, more specifically), into classrooms. These particular programs only represent a fraction of the total amount already in development both within Canada and worldwide. Therefore, students studying in the public school systems are being encouraged to use the Internet as a research tool in addition to its many other features.

Administrators at senior level institutions like universities and colleges have taken a different route altogether. At this level of education students are offered the freedom of a correspondence course without the restrictions of a classroom. Although this is a new approach to post secondary schooling, the target audience is centered on mature students who demand courses that offer flexibility with the interaction of a classroom setting. I refer to these students as students from 'Net University' because they seek all the opportunities of similar students but without the restrictions of going to school. Furthermore, it is my opinion that this particular student body has created a niche market of its own, which will and has motivated institutions of higher learning to go online.

## Kindergarten to Grade 8

For this aspect of my research, I found the information pointing primarily to the Internet as a resource tool. The fact that there is a trend throughout the world to introduce the Internet and its capabilities during this stage of student development has inspired many educators to create their own networks of learning in conjunction with the Internet. The changing network environment and the Internet's rapid commercialization has given birth to the notion of a next-generation Internet network, CA\*netII, to support the further development of advanced networking services and applications. CA\*net II will connect authorized sites at universities, other higher education institutions and research organizations. CANARIE has organized CA\*net II for implementation by carriers such as Bell Advanced Communications, Teleglobe and AT&T Canada, as well as universities, research organizations and other companies involved in R&D.<sup>1</sup>

How has this use of the Internet as an educational tool affected children, and how has it shaped the classroom environment? Well, both teachers and students at participating schools reported that the children had become more active learners.<sup>2</sup> Throughout most of the research completed for this report, the emphasis of turning children into 'active learners' is the main thrust behind having the Internet in the classroom. In Japan, the Ministry of Education established a joint effort between 100 elementary, junior, and high schools to illustrate the potential the Internet could have in the classrooms. Their discovery led them to believe that the Internet has the potential to become a vital tool in motivating students to learn more. Furthermore, this project identified a certain desire and interest by students to learn more about particular topics beyond that which they learn in textbooks.

This same enthusiasm has developed in North America as well. Bringing the Internet into the classrooms has brought curiosity to the minds of young students. If nothing else students who use the Internet will possess stronger reading skills - after all, you have to read the text on a site to get the information, even if it is "fun" sites that kids go to. And because not all the information on the Web is factual, students will learn new skills - for example, information literacy - to learn how to disseminate information to form their own opinions regarding the validity of such.<sup>3</sup> The reality of the Internet as a learning tool for students has made a big impact on students and teachers. Another point agreed upon by most of my research deals with teachers and their

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<sup>1</sup> The Internet. Advancing the Information Highway. Industry Canada

<sup>2</sup> <http://jin.jcic.or.jp/plaza/newsf9710.html> Japan Ministry of Education

<sup>3</sup> <http://www.afterfive.com/click/ig-41.html> The Internet Guys

changing role. Now that the Internet has given students access to more information than they can gain from teachers, the task of teaching itself is being rethought. As this change has taken place, many teachers reported that their roles have shifted from feeding students knowledge to teaching them how to learn.<sup>4</sup>

On the Internet is a vast pool of knowledge vital to the educational needs of the future. The net has intrigue students not for it's knowledge but because it is technology based. As the Ministry of Education in Japan stated, children are initially attracted to learning on the Internet because of the ability to interact with technology. This attraction is positive, as a role in education because it prepares our younger generation with the use of technology that will be imperative in their future careers. Furthermore, the excitement of learning over the net can help reduce the resistance some students may have with their study habits.

Opponents believe that there are too many potholes on the Information Superhighway to integrate it into today's classrooms. For example, much of the information on the Internet can not be verified.<sup>5</sup> Of course, it would be difficult at times to regulate certain activities students could engage in, but on the overall the benefits appear to outweigh the drawbacks. According Jim Gerland and Mark Winer of the *Internet Guys*, there are programs that can now be utilized such as *Net Nanny*, *Surf Watch* and *CYBERSitter* that can be used to monitor and withhold access students may have to certain sites. This restriction will allow teachers and educational institutions to overcome any questions with regards to safety of information.

Introducing the Internet and all it's capabilities to students of this particular age group is a wise decision. Current worldwide trends seem to point to the Internet as the new medium for learning and information exchange between students. The Internet and World Wide Web also acts as a motivator for learning and allows students the opportunity to learn more than what can be taught within public school systems. This is not to say that the Internet will become the sole resource of learning, because I still believe that personal contact between a student and teachers is vital to childhood development, but utilizing the Internet in conjunction with classroom instruction can help supplement overall knowledge.

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<sup>4</sup> <http://jin.jcic.or.jp/plaza/newsf9710.html> Japan Ministry of Education

<sup>5</sup> <http://www.afterfive.com/click/ig-41.html> The Internet Guys

## Grade 9 to OAC

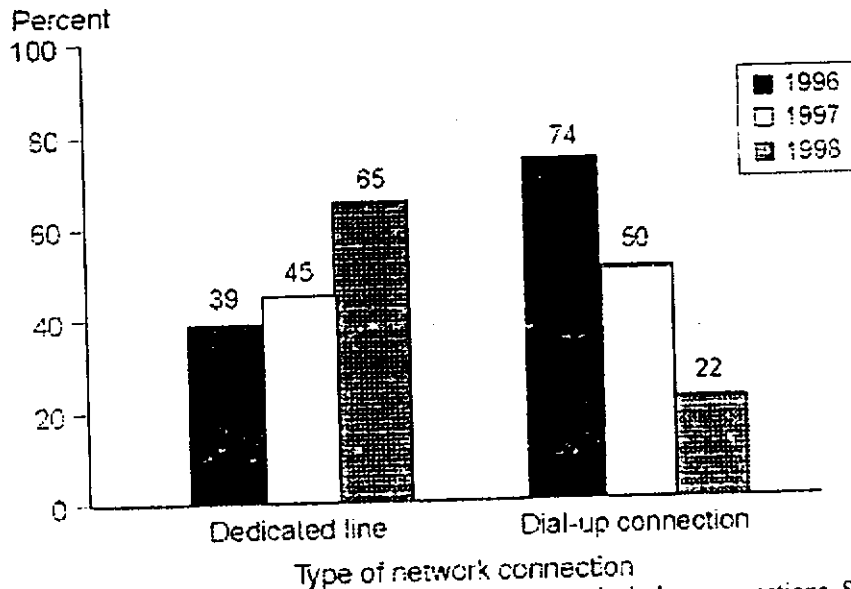
Researching this range of education level brought new and interesting results. An apparent trend taking control of this student population is the facilitation of education on the net through virtual schools. One such example is the *Toronto Virtual School*. The *Toronto Virtual School* is an on-line learning service, which makes available the math and science curriculum for grades 8 to 12.<sup>6</sup> This virtual school is a collaborative effort between a private firm specializing in educational software and Internet products and a certified Scarborough Board of Education teacher. The intention of this particular program is to move some of the in class curriculum onto the Internet where the student have the flexibility of learning at their own pace.

An advantage of this form of education begins with the motivation students have with regards to using technology. Furthermore, this virtual school also gives parents access to the performance of their child immediately so that they can keep up to date with their child's educational progress. Therefore, a closer relationship is established between the student and their education as well as between the parents and the student. I possible trend could be the emergence of such virtual schools integrated with the public school system. This relationship would not only allow students the flexibility and motivation to learn, but it would also allow teachers and parents to track the progress of the student more closely. This advantage would allow teachers and parents the opportunity of correcting possible problems early on before the problem become larger. It appears from some of the research I have completed that virtual schools of this nature are a strong possibility for the future. Furthermore, the increase of computers in classrooms supports this notion. In the United States, efforts have been made by state educators to increase the connection speed made available to students at their schools. The following chart is an indication of this effort.

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<sup>6</sup> <http://www.intoronto.com/virtualschool/overview/index.htm> Toronto Virtual School

## Percentage Indication of Internet Connections



NOTE: Data were also collected for ISDN, cable modem, and wireless connections. SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System. "Advanced Telecommunications in Public Elementary and Secondary Schools, 1996," *NCES 97-044*; "Internet Access in Public Schools," *NCES 98-031*; and data from the "Survey on Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, 1998.<sup>7</sup>

As the graph illustrates, education initiatives have taken the Internet more seriously by committing to more expensive connections. Moving away from telephone connections and into dedicated lines ensure that students have the necessary access to the Internet at all times. As a result of this dedication to Internet connectivity, there will be a strong market of students from various levels of education, which should be explored more closely. Another possible trend could be a more education specific web site that offers teachers as well as students new ranges of information. Another possibility lies with education specific search engines, which has to date only been explored by Yahoo. Under the nameplate of Yahoooligans ([www.yahoooligans.com](http://www.yahoooligans.com)), Yahoo offered students with education specific links to further their thirst for new knowledge. Furthermore, Yahoooligans also restricts access students have to content on the Internet making it more appealing to teachers and parents that fear exposure to inappropriate material.

As students progress through their educational careers, the importance of technology training becomes increasingly real. School boards from across the globe are supporting this initiative by making access to the Internet easier and without restrictions. At the secondary

<sup>7</sup> <http://nces.ed.gov/pubs99/1999017.html> National Center for Education Statistics, US.

schooling level, the Internet can provide students with an array of resources. The Canadian federal government has spotted this potential and responded with the Canadian Student Connection Program managed by Industry Canada. The Student Connection Program's (SCP) objective is to introduce the power of the Internet to small businesses across Canada. This program was announced in March 1996 by Prime Minister Jean Chrétien and Minister of Industry John Manley with a commitment of \$17 million over three years. It is a component of the Government of Canada's Youth Employment Strategy initiative and managed by Industry Canada.<sup>8</sup> This particular program allows aspiring students to apply their technology knowledge for the benefit of small businesses. Students benefit through SCP from the training they are given in Internet skills, the valuable work experience they obtain the exposure to potential employers, and the ability to help finance their education.<sup>9</sup> The possibilities of the Internet in the classroom are endless. As technology progresses further, the ability of information exchange will increase adding to the benefit of Internet based learning.

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<sup>8</sup> <http://strategis.ic.gc.ca/SSG/st00003e.html> Industry Canada and Strategis

<sup>9</sup> <http://strategis.ic.gc.ca/SSG/st00003e.html> Industry Canada and Strategis



## Post Secondary Education

At this level of education and training, many students use the Internet as a medium for correspondence-based education. My research has uncovered many University Institutions that offer courses over the Internet. The target market for these programs lies with people of mature status who are either professionally engaged in their careers or are studying from home. One such institution that I found to be most appealing was from the New School of Social Research in New York City. Through their distance education program, Distance Instruction for Adult Learners (DIAL), students from around the world are invited to continue their studies without constraints. DIAL, the New School's Distance Learning program, is an opportunity for people all over the world to take New School courses at their own convenience.<sup>10</sup> This forum of new education has become popular among mature students because it allows them work and complete their studies concurrently. Every student engaged in this program access it strictly from the Internet. Lecture notes are posted on the web site for the students to read and learn. When they have completed this responsibility, they are then invited to comment on the lecture or their readings through a message posting application supported by the web site. Through the posting of messages, other students including the Professor have the ability to communicate freely with each other at any time. What I found unique about the DIAL system was that it was strictly Internet based. Students of DIAL are taking courses these courses strictly over the Internet, where other programs offer the Internet as an addition to their courses. The result is a unique niche market that DIAL commands. It also establishes a history for the program to attract newer students from abroad and in larger quantities.

Opponents of this particular method of education argue that distance education can not support a clear line of communication that can only be reproduced within a classroom setting. Some trends in distance education have lead to the establishment of video conferencing as a new medium to reach students in remote locations. However, the cost incurred in video conferencing is still high due in part to the relative new technology. Nonetheless, distance education over the Internet allows students the opportunity to complete their studies on their own terms. Furthermore, distance education requires a commitment from students to be continually engaged this in turn propels the student to commit to their studies.

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<sup>10</sup> [http://www.dialnsa.edu/d\\_dial/d.htm](http://www.dialnsa.edu/d_dial/d.htm) The New School. distance education.

Another example of distance education for Canadian students currently running are Acadia, Simon Fraser, University of Waterloo, Royal Roads University of British Columbia and Athabasca University in Alberta. These Canadian institutions run similar programs to that of The New School's. The University of British Columbia has lead the move to Internet learning by producing some of the most popular software for web based education like WebCT. WebCT is a very popular application used by many universities around the world. It acts as a virtual classroom for students allowing them to view lessons, interact with their instructor and other students, complete and transmit assignments and papers, and other such functions. The interesting aspect of WebCT is that the program itself is free, but the instructors who use it are required to pay a licensing fee when they begin to use the program to teach courses.

What is important to understand in this section is that there is a move by mature students to move post secondary education out of the confines of a classroom and into their homes. Software like WebCT allows this to happen and with ease. As technology progresses further along, so to will the need for more comprehensive software and technology. In addition, programs from like the creation and implementation of new networks like the CA\*netII will move distance education into new territory without restrictions. The result of these efforts is the creation of new markets for education of all levels. Finding a niche market and providing the appropriate product will generate great returns. Furthermore, it may begin to redefine the method of education by allowing students the freedom of movement. The interesting aspect of Web-based education is in the variances of students. This creates an interesting mix of people that adds to the learning environment.

## Conclusion

The Internet presents many opportunities to both students and teachers. Currently, there is a strong move to implement web-based education in the classroom as method of exposing students to technology. In early childhood development, the Internet is seen as a vehicle to inspire learning. In Japan, the Ministry of Education has reported that students of a young age are enthusiastic about researching on the Internet. At the secondary level, educators see the Internet as a facilitation of education in the class. This facilitation allows student's closer contact to their education while allowing parents an increased amount of access to their child's educational development. To achieve this newer level of education, the Provincial government, in partnership with private companies, has formulated a plan to construct a new network to work in conjunction with the Internet. It is the intention of this network to reach new levels of education and research capabilities at increased speeds.

At the post-secondary level of education, institutions like the University of British Columbia and the New School of Social Research have entered new grounds of distance education. With popular software created by the UBC (WebCT), students and instructors are given a whole new aspect of education for which to benefit from. Mature students are now given the opportunity to learn through the New School's distance education program (DIAL) without the restrictions of a classroom. Furthermore, DIAL's unique market niche has attracted more international students to studying with their institution totally through the Internet.

Overall, there is an immense amount of potential for Internet based education. Both public and private support for this initiative will ensure that it continues to progress.

## Current Ontario Initiatives

### **Project 95/004: The Transformation of Teaching and Learning in a Technology Enriched Classroom**

The Leeds and Grenville County Board of Education (South Grenville District High School) and the Queen's University Faculty of Education are initiating a TIPP project to establish a dedicated, technology-based learning classroom and to explore the impact new developments in information technology will have on Ontario students, teachers, parents, classrooms and educational administrators in the near future.

Contact: Whit Prophet  
Leeds-Grenville Board of Education  
Phone: (613) 925-2855  
Web: <http://edu-ss10.educ.queensu.ca/~hudsonp/index.html>

#### **School Board Partners/ Minority Language Sections/ Faculties of Education**

Leeds-Grenville Board  
Queen's University  
Carleton County Board

#### **Private Sector/ Other Partners**

Bell Canada  
Choice 2000 Computers  
McGraw-Hill, Ryerson Publications  
Queen's University  
Smart Technologies

### **Project 95/109: Schools, Learning and Telecommunications in Teacher Education (SLATE)**

To promote pre-service and in-service professional development of teachers through close collaboration between faculties of education and school boards. Teams comprised of teacher candidates, associate teachers and faculty liaisons work together throughout the school year with support from information resources such as CD-ROM and telecommunications tools. The objectives are: to strengthen the connections between B.Ed course work and practicum; to establish more systematic linkages between teachers' professional development and practicum supervision; and to provide leadership in the use of telecommunications in teacher education.

Contact: Mark Danby, Assistant Professor  
Faculty of Education  
Queen's University  
Phone: (613) 545-6202  
Web: [http://educ.queensu.ca/~slate/index\\_slate.html](http://educ.queensu.ca/~slate/index_slate.html)

#### **School Board Partners/ Minority Language Sections/ Faculties of Education**

Queen's University  
Etobicoke Board  
Toronto Board  
Lennox and Addington Board  
Leeds and Grenville Board

#### **Private Sector/ Other Partners**

Analytical Micro Systems  
Canadian Network for the Advancement of Research in Industry and Education  
Dream Weaver Communications

## **Project 95/064: The Ontario Information Technology Management**

To develop IT curriculum for grades 10-12 whereby students learn to support their own school board and board technical environment; prepare students for related jobs in the IT sector. The London, Nipissing, North York, Ottawa, Ottawa RCSSB, Peel and Peterborough Boards have formed the Ontario Information Technology Management (OITM) Consortium to pilot the implementation of the Information Technology Management Program in the 1995-96 school year. This represents the first phase in developing an information technology curriculum for grades 10-12, preparing students for today's workplace while utilizing their skills to support technology-enabled learning environments for the school.

Contact: Ray Beyer  
Gordon Graydon Memorial Secondary School  
Phone: (905) 274-2391

### **School Board Partners/ Minority Language Sections/ Faculties of Education**

Peel Board  
Ottawa RCSSB  
Ottawa Board  
London Board  
Nipissing Board  
Victoria County Board  
North York Board

### **Private Sector/ Other Partners**

Knowledge Architecture Inc.  
Software Human Resources Council Inc.

## **Project 95/003: Teaching and Learning in the New Millennium**

To build a wide-area communications network within Kent County to link every desktop computer and to develop a remote training system for teachers. Kent County and Kent RCSSB will develop a wide-area communications network to link every desktop computer within both school systems. Each school will have access to resources such as local CD-ROM towers and countywide CD-ROM towers. Boards plan to generate learning materials consistent with the Common Curriculum. Model lesson plans, teaching strategies and learning modules can be distributed to teachers via the WAN. Boards plan to become their own Internet providers.

Contact: Edward W. Robbins  
Kent County Board of Education  
Phone: (519) 354-3770

### **School Board Partners/ Minority Language Sections/ Faculties of Education**

Kent County Board  
Kent County RCSSB

### **Private Sector/ Other Partners**

Bell Advanced Systems  
IBM Canada  
Intercom  
Smart Technologies

### **Project 95/013: Using technology to improve early childhood literacy**

To employ technology to enhance early childhood literacy in grades 1-3 using technology-based activity centres and on line and off line home activities. The goal is to enhance literacy within the communities served by the four boards through curricular-based use of technology. This project will enhance the student learning outcomes in early childhood literacy in grades 1, 2, and 3 in accordance with Common Curriculum and Royal Commission on Learning. Parents will be offered the opportunity to participate in their child's learning and enhance their own literacy skills through use of technology. This will be accomplished through technology-based activity centres in primary division classrooms; industry-leading learnware; cooperative learning strategies; linkage of students and parents through home activities; linkage among parents, teachers and students through adult literacy technology both at home and at school; comprehensive teacher training; synergy and sharing of ideas with other provincial initiatives.

Contact: Michael O'Keefe,  
Superintendent of Program  
Metro Separate School Board  
Phone: (416) 222-8282 ext 6582

**School Board Partners/  
Minority Language Sections/  
Faculties of Education**

Metro Toronto RCSSB  
Etobicoke Board  
North York Board  
York Region RCSSB

**Private Sector/  
Other Partners**

IBM Canada Ltd.

### **Project 95/057: Independent Learning Opportunities**

To set up a digital education system throughout the Prescott-Russell English Catholic school board (PRECSSB) including WAN, LAN, and multimedia education centre. The project involves the creation of a WAN for a rural eastern Ontario board of five schools. Each school will have a LAN for elementary and community-education delivery. The intent is to set up a digital education system. The high school will act as hub and resource centre for the elementary schools which in turn will provide continuing education facilities with which the community can participate in distance learning and independent programs through computer access to various networks.

Contact: William Crossan  
Prescott-Russell County English-Language RCSSB  
Phone: (613) 445-1406

**School Board Partners/  
Minority Language Sections/  
Faculties of Education**

Prescott-Russell English-Language RCSSB  
Carleton RCSSB  
Queen's University

**Private Sector/  
Other Partners**

AKRAN Systems  
New Brunswick Community College  
TRO Learning (Canada) Ltd.

## **Project 95/055: Equity and Access to Information Technology**

Equity and Access to Information Technology has been developed by the London Board of Education to use information technologies to achieve equitable learning opportunities and outcomes for all students. This project will allow all learners an opportunity to achieve technological literacy and staff to become sensitive to the needs of diverse populations and skilled in addressing these needs through the use of information technology.

Contact: Don Varnell, Executive Superintendent  
City of London Board of Education  
Phone: (519) 452-2000

**School Board Partners/  
Minority Language Sections/  
Faculties of Education**

London Board  
OKT - Onyota'a:ka Board of Education (Oneida)  
Chippewas of the Thames First Nation Board

**Private Sector/  
Other Partners**

IBM Canada Ltd.  
Industry Canada

## **Project 95/010: Hands On IT!**

In the classroom, the essentials of information technology are a computer, software, printer, CD-ROM drive, and modem. Integrated successfully into teaching and learning, information technology helps students learn, teachers teach, and all learners to link with each other. This project recognizes the importance of improving funding and support mechanisms for teacher computers and training. The project will equip teachers with the skills, knowledge, tools, and change-management capabilities to integrate information technology into their curriculum and build an all-inclusive culture for learning. By increasing the acceptance of information technology among teachers and their competency in the use of computer software, a new framework for teaching and learning will evolve.

Contact: Lori Cranson, Program Director  
The Learning Partnership  
Phone: (416) 204-4478  
Web: <http://www.tlp.on.ca>

**School Board Partners/  
Minority Language Sections/  
Faculties of Education**

The Learning Partnership  
17 school boards in the Greater Toronto Area  
Faculties of Education:  
- University of Toronto  
- York University

**Private Sector/  
Other Partners**

Apple Canada  
Hewlett-Packard  
IBM Canada Ltd.  
Industry Canada  
Information Retrieval Systems  
Pictech, Inc.  
Royal Bank of Canada  
TG Magazine  
TVOntario  
Xerox

## **Internet Resources Used:**

Note: The following is a list of all the Internet sites used for this research paper. Although there are still many more sites of information regarding this subject, every effort was made to research only those sites that provided direct Canadian information.

1. Community Learning Network:  
[www.cln.org/cln.html](http://www.cln.org/cln.html)
2. Association for Media and Technology in Education in Canada  
[www.aintec.ca/](http://www.aintec.ca/)
3. The Newschool of Social Research → Distance Instruction for Adult Learning (D.I.A.L)  
[www.dialnsa.edu/index.html](http://www.dialnsa.edu/index.html)
4. EdWeb → Exploring Technology and School Reform By Andy Carvin  
<http://edweb.gsn.org/>
5. The Student Connection Program  
[www.scp-cbb.com/estart.htm](http://www.scp-cbb.com/estart.htm)
6. Distance Education and Technology at the University of British Columbia  
<http://det.cstudies.ubc.ca/>
7. Ontario Ministry of Education and Training  
[www.edu.gov.on.ca/eng/welcome.html](http://www.edu.gov.on.ca/eng/welcome.html)
8. Internet News, Canada's #1 Internet Newspaper  
[www.internetnews.ca/](http://www.internetnews.ca/)
9. Strategis → Industry Canada's Information Web Site  
[www.strategis.ic.gc.ca](http://www.strategis.ic.gc.ca)
10. The Toronto Virtual School  
[www.intoronto.com/virtualschool/](http://www.intoronto.com/virtualschool/)
11. Japan Ministry of Education  
<http://jin.jcic.or.jp/plaza/newsf9710.html>
12. The Internet Guys, Jim Gerland and Mark Winer  
[www.afterfive.com/click/ig+1.html](http://www.afterfive.com/click/ig+1.html)
13. The United States National Center for Education Statistics  
<http://nces.ed.gov/pubs99/1999017.html>
14. International Center for Distance Education (ICDL)  
<http://www-icdl.open.ac.uk/icdl/index.htm>