# Assessment of Canadian Teachers' and Students' Needs For Educational Resources on the Web: Literature Review and Strategic Analysis

**Final Report**

**Submitted by CEFRIO to the Department of Canadian Heritage**

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**Assessment of Canadian teachers' and students' needs for educational resources on the Web: Literature review and strategic analysis**


**TEXT AND ANALYSIS OF RESULTS**
**Catherine Lamy**, Assistant Director, Research and Strategic Monitoring, CEFRIO

**COLLABORATION**
**Eric Lacroix**, Director, Research and Strategic Monitoring, CEFRIO
Overall project coordination

**Isabelle Vachon**, Consulting Analyst, Research and Strategic Monitoring, CEFRIO
Expertise in educational technology

**Isabelle Poulin**, Documentalist, Research and Strategic Monitoring, CEFRIO
Documentary research


For any additional information, please contact CEFRIO.


Quebec City Office:
888, Saint-Jean, bureau 575
Quebec City, Quebec G1R 5H6
Tel: (418) 523-3746
Fax: (418) 523-2329

Montreal Office:
550 Sherbrooke Street West,
Suite 350, West Tower
Montreal, Quebec H3A 1B9
Tel: (514) 840-1245
Fax: (514) 840-1275

Email: info@cefrio.qc.ca
Web site: www.cefrio.qc.ca

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## Executive Summary

In Canada, in the last few years, there have been several studies of the needs and expectations of teachers and students in primary and secondary schools with respect to educational resources available on line. Though fragmentary in some cases, these studies do document the situation and help to sketch a preliminary portrait of what those active in our area of interest would like to have.

It was in this context that the Department of Canadian Heritage commissioned CEFRIO to analyze and integrate these various studies. By relating the needs and expectations expressed by Canadian teachers to the overall context of the use they make of information and communications technologies (ICTs), this report is designed to provide the Department with a comprehensive view of the issue, and ultimately to offer guidance for any action it may take in the development of electronic content.

### Premises

The educational content currently available seems poorly suited to the learning goals of the new primary and secondary programs in history and social sciences instituted by several Canadian provinces and territories. Given these findings concerning both the outdated tools available and the lack of financial resources that afflicts our education system, and with the development of ICTs and their penetration of Canadian homes and schools, the appeal of on-line resources is an obvious one. Moreover, young Canadians are enthusiastic users of ICTs, especially the Internet. While for them the Web is primarily a source of entertainment, they also prefer using it for their school work. In the light of these few premises, we can but conclude that the development of online learning resources definitely represents one solution to the current shortcomings observed and complained about by Canadian teachers.

On the other hand, while most teachers seem to have the technical skills to use ICTs for administrative purposes, a smaller proportion of them seem to have the skills needed to get students to take part in the effective use of technology to complement their learning. According to the authors we consulted, far from being the result of an ICT block afflicting teachers, the shortcomings observed in their adoption of technology seemed attributable more to the various practical obstacles they face: lack of time, lack of training, non-existent technical support, and so on. Thus, Canadian teachers are still beset by various contingencies that explain the still relatively low level of use many of them make of ICTs in class.

### The needs and expectations of Canadian teachers

- The subjects for which teachers identify deficiencies in online educational resources are many and varied (key events in Canadian history, local history, different cultural communities and so on);
- A lack of resources in French is noted by many of the sources we analyzed;
- Apart from the subjects themselves, what teachers seem to find most difficult is finding content that is relevant and meshes with existing curriculum;
- While the types of content seem to vary, what is asked for most is videos and other visual material, course plans with interactive components, and “turnkey” lessons;
- The multimedia interactive approach is strongly advocated by teachers;
- Educational resources have to be current, reliable, practical, complete, flexible and suited to the learners’ language abilities;
- Aboriginal students and those who experience difficulty in completing their education in one of the official languages continue to be poorly served;

- Teachers would like access to a search engine that is flexible, adaptable and designed specifically for their use;
- The creation of a portal, or a "repository of learning objects," and a single access point for content geared to existing curriculum are strongly encouraged by many teachers;
- Such a virtual location could also become a forum for exchanging ideas with peers, and could support a virtual community that would enable teachers to network with other teachers.

**Conclusions**

In order to integrate ICTs into teaching practice, it is vital for public authorities (governments, ministries of education, school boards, schools and so on) to take into consideration the professional and organizational constraints teachers have to cope with. Once these obstacles to the adoption of ICTs have been removed and a majority of teachers have the skills to make effective use of the Web, it will certainly be easier to make a full and accurate inventory of their needs and expectations with respect to online educational resources.

At the conclusion of this exercise, we have to say that consultations with teachers and students on their requirements for online educational content are still at a very rudimentary stage in Canada. Nevertheless, analyzing those requirements has been most enlightening and has enabled CEFRIO to make twenty recommendations to the Department of Canadian Heritage. Here we shall mention only the most important one, namely that given the dimensions of the task, the Government of Canada should definitely avoid trying to do everything itself, and thereby assume sole responsibility for online educational resources. Rather, it should act as a facilitator and support the development of initiatives which, while local, can be "exported" to other regions and contexts. Lastly, before supporting the creation of new electronic resources, the Department should make sure that the content already available has been inventoried and brought to the attention of teachers, who in many cases indicated that they were unaware of its existence. It is vital, in other words, to avoid reinventing the wheel, and to improve the distribution and sharing of the educational content that already exists.

> Teachers and students are transforming what can be done in schools by using technology to access primary sources, expose our students to a variety of perspectives, and enhance the overall learning experience through multimedia, simulations and interactive software.
> (U.S. Department of Education, Office of Educational Technology, *National Education Technology Plan*, p. 7)

In line with the objective pursued by Canadian Culture Online, namely "to produce and make available to Canadians the digital cultural content that will help promote our country's rich culture, history, arts and heritage,"[1] the Department of Canadian Heritage seeks to develop online information services designed for use by Canadian teachers and students. Related directly to the areas in which the Department is active, these services will address Canadian culture and heritage, social studies, heritage and contemporary languages and so on. However, before moving forward in that direction and in order to prioritize future investment in the development of online resources, it is important to identify the needs and expectations of those most directly concerned.

Over the last few years, some studies have been done in Canada that provide documentation on the situation. While in many cases fragmentary, this work has helped to develop an outline of what Canadian primary and secondary school teachers and students need.

It was against this backdrop that the Department commissioned CEFRIO to help it make an inventory of studies in this area carried out in the last three years,[2] and analyze and integrate their findings.

This report is the result of that effort. In order to establish the overall context in which the needs and expectations of Canadian teachers and students with regard to online content are to be viewed, the report begins by setting out a few premises, in particular the problems noted with existing educational resources, the level of penetration by ICTs in Canadian schools, and the appeal they have for young people.

Using the results from a number of recent studies, the report then touches briefly on the actual adoption of ICTs by Canadian teachers, and more specifically the obstacles they encounter, which appear to be closely related to the needs they express for online educational resources. Lastly, with the context clearly established, the expectations expressed by teachers in a number of qualitative studies will be presented: subject areas in which deficiencies are reported, types of online resource to be preferred, client groups whose needs appear most pressing, best means of access to such resources (portal, search engine and so on).

By focussing on the needs and expectations respecting online resources expressed by Canadian teachers and looking at these from the viewpoint of the teachers' use of ICTs, this study seeks to give the Department an overall view of the issue, and ultimately to offer guidance for any action it may take in the development of electronic content.

[1] http://www.pch.gc.ca/ccop-pcce/index_e.cfm (consulted March 8, 2005).
[2] The results of this research were forwarded to the Department on February 7, 2005.

# Chapter 1 Premises

## 1.1 WHY SHOULD NEW EDUCATIONAL RESOURCES BE DEVELOPED IN CANADA?

In Canada, the changes in the primary and secondary history and social sciences curriculum instituted by several provinces and territories have made it essential to develop new educational resources. The content currently available seems difficult to adapt to the learning objectives of the new programs, which in many case are very different from the previous ones. (O'Neill, 2004).

A recent report published by the Historica Foundation highlights the main deficiencies in the resources designed to teach history and social sciences.[3] According to the teachers questioned for a survey[4] on which the report's author, Maryrose O'Neill, relied, some of the problems are that:

- Some aspects of programs, such as the teaching of transverse skills, are not addressed in the tools now available to teachers;
- The level of language in the resources often seems too high for students whose mother tongue is neither English nor French or those who have elected a vocational rather than an academic track;
- The budget restrictions imposed on schools are also responsible for the fact that classroom resources are inadequate;
- Textbooks and other aids are often outdated;
- As a result, teachers themselves have to find the materials they need to teach the new programs.

Ms O'Neill also notes that Canada's decentralized education system represents an additional challenge to the development of resources that will suit teachers and students nationwide. Finally, in Canada as elsewhere, the schools have to cope with a lack of financial resources that compels them to seek innovative solutions in order to maintain the quality of the teaching they provide.

## 1.2 ONLINE RESOURCES

Given these findings concerning both the outdated tools available and the lack of financial resources that afflicts our education system and with the development of ICTs and their penetration of Canadian homes and schools,[5] the appeal of on-line resources is an obvious one.[6] Note also that "Connecting Canadians is the federal government's vision and plan to make Canada the most Internet-connected country in the world." [7]

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[3] O'Neill, Maryrose (2004). *Final Report on Gaps in Resources Available to Deliver History and Social Studies Curricula in Canada*, Historica, 37 p.

[4] This online survey of 220 Canadian teachers was carried out by Historica in June and July 2004. The purpose was to highlight teachers' needs for educational resources, and interviews of 23 teachers were also conducted in July 2004. For a summary of the results, see Clare Leaper (2004), *Survey Report: History Curricula and Resources in Canadian Schools*, Historica, 13 p.

[5] Many studies have documented the penetration of our schools by ICTs. They include:

- Plante, Johanne, and David Beattie (2004). *Connectivity and ICT integration in Canadian elementary and secondary schools: first results from the Information and Communications Technologies in Schools Survey, 2003-2004*, Ottawa, Canada. Statistics Canada. Culture, Tourism and the Centre for Education Statistics, 67 p. [on line] http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=81-595-MIE2004017 (consulted March 8, 2005).
- Statistics Canada and the Council of Ministers of Education (2003). *Education Indicators in Canada: Report of the Pan-Canadian Education Indicators Program 2003*, Ottawa, Canada. Statistics Canada, 399 p. [on line] http://www.statcan.ca/english/freepub/81-582-XIE/2003001/pdf/81-582-XIE03001.pdf (consulted March 8, 2005).

[6] The United States recently reaffirmed the intention to promote the publication of digital content, seen as clearly more cost-effective, rather than paper textbooks, as set out in the latest national education plan: U.S. Department of Education, Office of Educational Technology (2005). *Toward a New Golden Age in American Education*, [on line], http://nationaledtechplan.org/docs_and_pdf/National_Education_Technology_Plan_2004.pdf (consulted March 8, 2005).

[7] http://cap-pac.ic.gc.ca/francais/5100.shtml (consulted March 8, 2005) [link broken].

Other studies tell us that young Canadians are keen users of ICTs, and especially of the Internet. While they use the Web mostly for entertainment, the Internet has also become their favourite tool for doing their school work.

According to a 2001 Environics survey of 5,682 Canadians aged 9 to 17, conducted for the Media Awareness Network:[8]

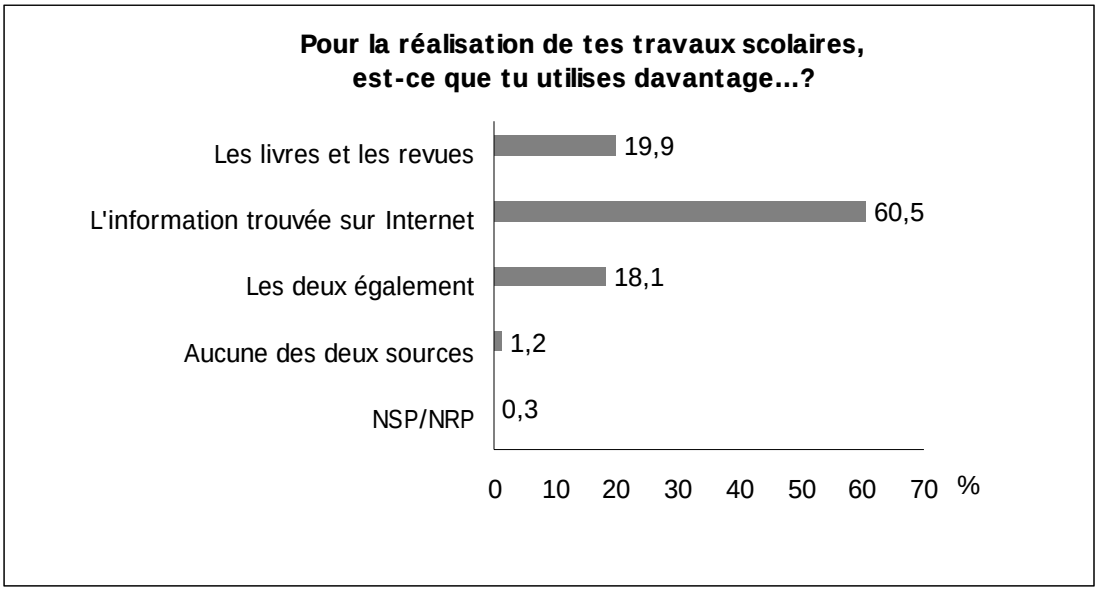
- When young people were asked which are their three main sources of information for their school work, **Web sites (44%) were at the top of the list of first choices**. Smaller percentages mentioned books from the public library (19%), books from school (16%), books from home (4%) and CDs or DVDs (4%). (p. 28)
- **More than six out of ten (63%) said they used the Internet at least once a month to do school work**, including three out of ten (32%) every day or almost every day (7%) and once or twice a week (25%). (p. 28)
- **Nearly half (49%) of the secondary school students said that using the Internet had improved the quality of their school work.** (p. 28)
- **Almost four out of ten (37%) said they used the Internet at least once a month to look for information on events in Canada, Canadian history, and prominent Canadians or places in Canada.** (p. 29)
- More than two out of ten young people (24%) mentioned educational benefits, such as help with homework.

*NetAdos,*[9] a more recent CEFRIO survey of 1,000 Quebec teenagers and their parents, produced very much the same findings. The results of our survey show that the Internet has now become the favourite source of information for most 12 to 17-year-olds in Quebec when they have school work to do. More than 6 out 10 (60.5%) say they use it more than they use books and magazines for that purpose. Note, however, that one respondent in five (19.9%) prefers print documents (books and magazines), while 18.1% use both sources equally.

[8] Environics Research Group for the Media Awareness Network (2001). *Young Canadians In a Wired World: The Students' View*, [on line] http://www.media-awareness.ca/english/special_initiatives/surveys/phase_one/students_survey.cfm (consulted March 8, 2005).

[9] CEFRIO (2004). *NetAdos 2004 : Portrait des 12-17 ans sur Internet : Sondage réalisé auprès des ados québécois et de leurs parents* [Internet users aged 12-17: a survey of Quebec teenagers and their parents], [on line], http://www.infometre.cefrio.qc.ca/loupe/enquetes/netados2004.asp (consulted March 8, 2005).

**Figure 1.2a**

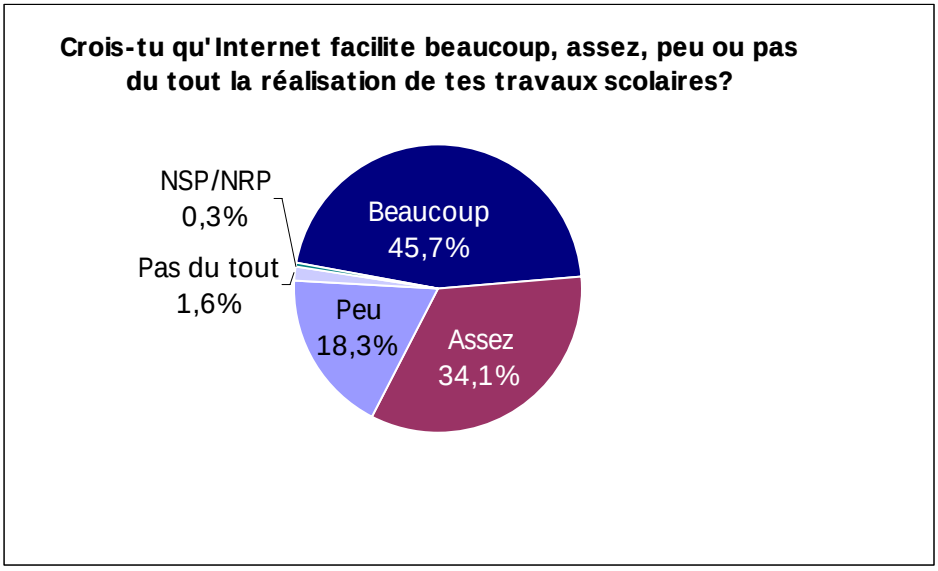



| | | |
|---|---|---|
| **To do your school work, which do you use more?** | **Books and periodicals** | **19.9** |
| | **Information from the Internet** | **60.5** |
| | **Both equally** | **18.1** |
| | **Neither** | **1.2** |
| | **Don't know/no answer** | **0.3** |

**Base**: Quebec teenagers using the Internet to do school work

Almost 8 out 10 teenagers (79.8%) say that the Internet helps them with their school work "a lot" or "quite a lot."

**Figure 1.2b**




| | | |
|---|---|---|
| **Does the Internet help you with school work a lot, quite a lot, not very much or not at all?** | **A lot** | **45.7%** |
| | **Quite a lot** | **34.1%** |
| | **Not very much** | **18.3%** |
| | **Not at all** | **1.6%** |
| | **Don't know/no answer** | **0.3%** |

**Base**: Teenagers using the Internet to do school work

In 2004, young people in Quebec aged 12 to 17 were spending on average 2 hours a week on school activities on line, and about 6 hours a week on personal recreational use.

Given the foregoing premises, it is clear that the development of online educational resources is certainly one solution to the current shortage that Canadian teachers complain of. The question is, however, are they really ready to exploit them to best advantage?

# Chapter 2 Use And Adoption Of Icts By Teachers

There have been numerous studies in Canada of the integration of ICTs into Canadian schools and their use by teachers.[10] They use many indicators (student/computer ratios, types of technology used, obstacles to the use of ICTs and so on) to provide a statistical portrait of connectivity in Canadian schools.

Remembering that our objective here is to define the overall context in which the needs and expectations of teachers with respect to online resources may be expressed, we shall examine not the details of these studies, but the conclusions that may be derived from them.

## 2.1 EXPLOITATION OF THE INTERNET BY CANADIAN TEACHERS: WELL BEYOND WIRED SCHOOLS

As Maryrose O'Neill (2004) has pointed out, it is clear from the studies that mere access to computers and the Internet is not enough to ensure that teachers will use the Web as a teaching resource. Although 95.9% of Canadian schools are now on line, use of the Internet is integrated into teaching practice in only 28.8% of classes (Ertl and Plante, 2004). While most teachers have the technical skills needed to use ICTs for administrative purposes (preparation of school newsletters, attendance records, marks and so on), a smaller proportion seems to have the ability to get students to take part in the effective use of ICTs to further their learning (Plante and Beattie, 2004).

Another recent survey[11] of Quebec teachers has also illustrated the limitations of teachers' computer skills. At the conclusion of their analysis, the authors noted that in general, Quebec teachers have a level of computer literacy that equips them technically speaking to use most of the functions available through school computers, but most have few if any of the necessary skills to use the more sophisticated software that would enable them to create and manage Web sites or pages (Larose, Grenon and Palm, 2004, p. 132).[12]

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[10] See in particular:

- Plante, Johanne, and David Beattie (2004). *Connectivity and ICT integration in Canadian elementary and secondary schools: first results from the Information and Communications Technologies in Schools Survey, 2003-2004*, Ottawa, Canada. Statistics Canada. Culture, Tourism and the Centre for Education Statistics, 67 p. [on line] http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=81-595-MIE2004017 (consulted March 9, 2005).
- Statistics Canada and the Council of Ministers of Education (2003). *Education indicators in Canada: Report of the Pan-Canadian Education Indicators Program 2003*, Ottawa, Canada. Statistics Canada, 399 p. [on line]. http://www.statcan.ca/english/freepub/81-582-XIE/2003001/pdf/81-582-XIE03001.pdf (consulted March 9, 2005)
- Ertl, Heidi, and Johanne Plante (2004). *Connectivity and learning in Canada's schools*, Ottawa, Canada. Statistics Canada. Science, Innovation and Electronic Information Division., 30 p. [on line]. http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=56F0004MIE2004011 (consulted March 9, 2005).
- Canadian Teachers' Federation and Vector Research (2003). *An Investigation of the Integration of Information and Communication Technology into Canadian Schools and Classrooms*, Ottawa, Canadian Teachers' Federation, [149 p.] [on line] http://www.ctf-fce.ca/en/side/ICT.htm (consulted March 9, 2005).

[11] Larose, François, Vincent Grenon et Stéphane B. Palm (2004). *Enquête sur les profils d'utilisation des technologies de l'information et de la communication en enseignement au Québec* [survey of the use of ICTs in teaching in Quebec], Sherbrooke, University of Sherbrooke. Faculty of Education. Centre de recherche sur l'intervention éducative [teaching research centre], 133 p. [on line] http://www.educ.usherb.ca/crie/enligne/resultats/Rapport1-complet.pdf (consulted March 9, 2005).

[12] Note moreover that according to a study by Thierry Karsenti, an associate professor in the Department of Psychopedagogy and Andragogy, Faculty of Education, University of Montreal, and holder of the Canada research chair in ICTs in education, Quebec's teachers of the future seem hardly better prepared than their predecessors to use ICTs as a teaching and learning tool. The results of Karsenti's study show that some 91% of respondents rate themselves "good" or "expert" at word processing, which they use mostly for lesson planning and management. When it come to using presentation software such as PowerPoint, however, more than 55% rate themselves "novices," and fewer than 1% are "expert." In the creation of Web pages, almost 86% regard themselves as novices, and fewer than one respondent in 700 claims an "expert" rating. Karsenti, Thierry (2004). "Les futurs enseignants du Québec sont-ils bien préparés à intégrer les TIC?" [are Quebec's future teachers well prepared to integrate ICTs?], *Vie pédagogique*, No. 132, p. 46. [on line] http://www.viepedagogique.gouv.qc.ca/numeros/132/vp132_45-49.pdf (consulted March 9, 2005).

These studies compel the conclusion that there is a consensus that beyond mere school connectivity, full adoption of ICTs by teachers requires that several other conditions be satisfied. Published by the Alberta Teachers' Association in 1999 and revised in 2004, *Technology and Education*[13] provides a list of the "winning conditions." Among these is the need for:

- A vision of the role of technology in public education based on humanistic and democratic principles;
- Proactive leadership to achieve the vision;
- Commitment to the central importance of the teacher's professional judgment in decisions about the use of technology
- Access to technological resources that are specific to learner needs;
- Access to technology hardware, software and telecommunication networks;
- Timely access to technical support;
- Time for teachers to learn about technology and to develop technology-supported curriculum;
- Public funding that addresses the total cost of ownership for technology;
- Policies at the system and school level that support the appropriate integration of technology;
- Acceptance of the teacher as final arbiter in the use and application of technology

## 2.2 OBSTACLES TO EFFECTIVE EXPOLITATION OF ICTS IN TEACHING

According to the authors consulted, and although the idea may be challenged, far from being the result of any "technology block" on the teachers' part, the shortcomings noted in their adoption of ICTs seem to be attributable rather to the various obstacles they face as teachers. These constraints have been very well documented (Looker and Thiessen, 2003; Milton, 2003; Compas, 2004; Dibbon 2004; Leaper, 2004; Sasseville, 2004; Larose, Grenon and Palm, 2004), and are in fact the corollaries of the winning conditions listed above. The main ones observed are:

- The lack of time to master the new tools and derive full benefit from them;
- The deficiencies in – or lack of – training in ICTs;
- Insufficient or non-existent technical support;
- Lack of financial resources;
- Pressure to cover all the study programs;
- Equipment inadequacies (computers, software, operating licences and so on).

Note too that among the obstacles, **lack of time** seems to be the biggest problem, and the greatest challenge teachers face (Compas, 2004; Dibbon, 2004; Leaper, 2004; Sasseville, 2004).

Lastly, as Bastien Sasseville perceptively notes after his study of the main factors obstructing the integration of ICTs in the schools,[14] most of them seem to have more to do with professional and organizational constraints than with practical concerns. Sasseville notes the wide gap between what you read in teacher periodicals about an idealized image of schools transformed by technology and what you hear from the teachers, who have a much stronger link to reality.[15]

Canadian teachers, as we can see, are coping with various contingencies that explain the still relatively low level of ICT use by many of them in the classroom. For the adoption of ICTs to lead

[13] http://www.teachers.ab.ca/About+the+ATA/Policy+and+Position+Papers/Position+Papers/Technology+and+Education.htm (consulted March 9, 2005).

[14] Sasseville, Bastien. (2004). *Integrating Information Technology in The Classroom: A Comparative Discourse Analysis.* Canadian Journal of Learning and Technology. Vol.30, No.2. pp.5-27. [on line] http://www.cjlt.ca/content/vol30.2/cjlt30-2_art-1.html (consulted March 9, 2005).

[15] Martine Rioux, "Contraintes à l'utilisation des TIC [constraints on ICT use]," *L'Infobourg*, May 21, 2002. [on line] http://www.infobourg.com/sections/actualite/actualite.php?id=7392 (consulted March 9, 2005).

to genuine integration into teaching practice, it is thus quite clear that these various constraints must be taken into consideration (Rioux, 2002).

# Chapter 3 Teachers' Needs And Expectations With Respect To Online Educational Resources

## 3.1 SOURCES

Probably because many teachers have not yet really integrated ICTs into their teaching and consequently many make very little if any use of the resources currently available on line, few studies to date seem to have addressed their needs and expectations in this area. While they are few in number, the sources listed below are very current and very rich in informative content:

- Ad Hoc Research (2004). *Exploratory Research Regarding Multimedia Educational Material*, 24 p.
  In order to learn the needs and opinions of teachers with respect to new multimedia educational material it wants to develop, Parks Canada commissioned Ad Hoc Research to conduct this study. Although it is limited to the themes and products offered by Parks Canada, some more general information is also provided.
- Library and Archives Canada (LAC) (2003). National Educators Consultation, April 4 and 5, 2003, Gatineau Preservation Centre. [on line]
  http://www.collectionscanada.ca/education/008-1031-e.html
  In relation to the main issue: "How to enable students across Canada, regardless of where they are located geographically, to have access to the documentary heritage of Canada for the purposes of learning, reflection and growing in understanding about what Canada has been, is and what Canada can be.," teachers took part in open discussions on three themes: use of primary sources in teaching, development of teaching resources based on primary sources, and what teachers would expect to find in the Virtual Learning Centre proposed by LAC.
- Leaper, Clare (2004), *Survey Report: History Curricula and Resources in Canadian Schools*, Historica, 13 p.
  This is the report on the survey of Canadian teachers on which the following report is based. Designed to highlight their educational resources requirements, this was a survey of 220 Canadian teachers, and included 23 personal interviews. A significant caveat is appropriate, however: the sample consisted of surfers already familiar with Historica and its resources, and thus is not representative of teachers nationwide.
- O'Neill, Maryrose (2004). *Final Report on gaps in resources available to deliver history and social studies curricula in Canada*, Historica, 37 p.
  Based on four studies for the Historica Foundation, including a survey of Canadian teachers in the summer of 2004, this is one of the best sources of information available on the subject.
- Patterson, Langlois Consultants/Ad Hoc Research for Canadian Culture Online (2003). *Qualitative Research on Canadian Cultural Content on the Internet for Educators,* 32 p. [on line]
  http://www.culturalcontentforum.org/publications/qualitative.doc
  This report was submitted to the Department of Cultural Heritage. It reviews the nature of the Web content that Canadian primary and secondary school teachers want the Government of Canada to make available to them to help them teach their students about Canadian culture. As the research brief for the study notes, the central question for this study was: "What specific kind of cultural content is required by teachers in Canada's schools and how can Canadian Culture Online assist in making that content available?" The findings "emanate from a series of eleven focus groups with high school and elementary school teachers, held during the week of March 10, 2003."
- Société Radio-Canada (2004). *Étude de l'utilisation et commentaires : analyse de la section « Pour les profs » du site des Archives de Radio-Canada*, 16 p.
  Canadian Broadcasting Corporation (2004). *Use and Opinions: An Analysis of the "For Teachers" section of the CBC Archives Web site*, 16 p.

CBC/Radio-Canada New Media commissioned a pop-up survey to find out how teachers use the "For Teachers" section of the CBC Archives Web site. The survey was conducted in the winter of 2004, from February 2 to March 31. Some 700 teachers responded: just under 300 at the Radio-Canada.ca site, and 400 at CBC.ca.

### 3.2 SUBJECT AREAS AND THEMES WHERE THERE ARE DEFICIENCIES

The subject areas in which teachers identified deficiencies in online educational resources are many and varied. The teachers canvassed for the various studies we consulted noted shortcomings with regard to:

- Key events in Canadian history (the Winnipeg General Strike and so on) (LAC, 2003);
- Local history of the communities their students come from (O'Neill, 2004);
- Canadian duality and symbols (the national anthem, the flag and so on) (LAC, 2003);
- Canada's cultural communities, particularly the First Nations, Métis and Inuit (LAC, 2003; Patterson, Langlois Consultants, 2003);
- Religions, in relation to ethical issues (CBC, 2004).

The consultation carried out by Library and Archives Canada (2003) identifies teachers' needs by the level they teach at. Elementary teachers wanted educational resources on:

- Multiculturalism, ethnicity, the respective roles of the sexes, social roles;
- Changes in role models, schools, transportation, recreation and technology. (p. 10)

Secondary teachers' concerns were related more to four main themes:

- Certain time periods (for example, the 1920s and 1930s);
- The constitutional battles in Canada before Confederation;
- Political versus social history;
- Curriculum between provinces (p. 13).

Teachers also noted a great need for resources to assist them in passing on transverse skills, such as the development of critical thinking, civics, and communication and research skills (O'Neill, 2004).

**The special case of resources in French**

Shortcomings in resources in French are noted in several of the sources we analyzed. In general, teachers complain of the lack of content available in French (LAC, 2003), and French immersion teachers note that the content is not suited to the language skills of their students (Patterson, Langlois Consultants, 2003; O'Neill, 2004). Francophone teachers outside Quebec look for sites that match the reality of their own province or community; they do not like having to modify Quebec-based content (Patterson, Langlois Consultants, 2003, p. 8).

Beyond the subjects themselves, however, what seems most difficult for teachers is finding content that is relevant and usable in class (Patterson, Langlois Consultants, 2003), in the sense that it is geared to contemporary curriculum (LAC, 2003; Ad Hoc Research, 2004). According to the results of the Historica survey (Leaper, 2004), more than half (53%) of the respondents said that available resources were a satisfactory complement only for "some" or "a few" of their curriculum goals (p. 2). From the viewpoint of the teachers, who claim moreover that they often spend time on futile searches for information that bears directly on what they are teaching, close correlations between the content available and the curriculum should therefore be established.

### 3.3 TYPES OF EDUCATIONAL CONTENT SOUGHT

The studies we consulted are unanimous on this point: teachers need a wide variety of resources: text, video, photographs and so on. The studies tell us that Canadians teachers want:

- Photographs, image banks (LAC, 2003; CBC, 2004);
- Print newspapers and periodicals (LAC, 2003; CBC, 2004);
- Videos, DVDs, films and audio materials (LAC, 2003; CBC, 2004; O'Neill, 2004; Leaper, 2004);
- Maps (LAC, 2003);
- Lesson plans (LAC, 2003; Patterson, Langlois Consultants, 2003; Leaper, 2004);
- Learning models (LAC, 2003);
- Exercises in comparison, problem-solving, opinion analysis and so on (LAC, 2003);
- Tool kits designed for students (LAC, 2003);
- Turnkey lessons and hands-on resources on various subjects (CBC, 2004; O'Neill 2004; Leaper, 2004; Ad Hoc Research, 2004).

While the types of content teachers want thus seems varied, the studies we looked at indicate that what they want most of all are: **videos and other visual materials**, **lesson plans with interactive components** and **turnkey lessons**. Where online resources are concerned, the interactive multimedia approach is very much favoured by teachers (LAC, 2003; Ad Hoc Research 2004; Leaper, 2004), who know how keen their students are on these types of content. This should not come as a surprise: young people today live in a universe dominated by visual media (television, film, the Web and so on), and as we have seen, they are very hip to technology.

### 3.4 CHARACTERISTICS OF THE EDUCATIONAL RESOURCES DESIRED

As we have seen, teachers have to cope with a number of organizational constraints, lack of time being one of the dominant ones. In the circumstances, the educational resources they want access to must be current, reliable, practical, complete, flexible and geared to their students' language ability (O'Neill, 2004, p. 3). Teachers find that many of the tools that are now available are out of date.

In more detail, following are the main characteristics that content offered to Canadian teachers should incorporate (O'Neill, 2004, pp. 21-22 and 25):

- The content as presented should be accurate and should relate directly to the curriculum teachers and students have to cover;
- The resources should be flexible enough to be used effectively in a variety of learning situations. Teachers must be able to adapt them to the particular characteristics of their students: knowledge, language ability and so on;
- The resources should be "ready to go," user-friendly and easy to access, so that teachers can readily find what they need in a given context or situation.

O'Neill feels that the content offered should also be modern in educational terms; in particular, it should:

- Offer teachers ideas and activities for various teaching levels, and various courses at a given level;
- Allow teachers and students to make connections between various learning activities;
- Be related to the specific circumstances of the students – for example, the knowledge they already have – so as to get them involved in the learning process;
- Encourage learners to delve more deeply into a given subject and further develop their skills;
- Include a practical and specific user guide that, for example, suggests teaching strategies, exercises for the students, evaluation methods and so on.

### 3.5 CLIENTELE WHOSE NEEDS ARE MOST PRESSING

Apart from the fact that teachers point out a lack of resources in French suited to the needs of **students in French immersion** and **Francophone students outside Quebec** (see box, section 3.2), **Aboriginal students** and **those experiencing difficulty** in completing their education in either of the two official languages also need to be better served (O'Neill, 2004).

### 3.6 HOW DO TEACHERS WANT TO ACCESS RESOURCES?

*Search engine and single portal*

While the development of new content is thus a desideratum for Canadian teachers, ready access to such content – and to the online resources already available – also remains a priority for them. Teachers noted that searching for relevant information on the Web can often be a tedious and discouraging experience. While they know that suitable resources are likely to be found somewhere on the Web, the network is so vast and disorganized that useful sites often go unnoticed (Patterson, Langlois Consultants, 2003).

In this context, when asked how they would like to trace the sources they need, teachers express a preference for varied means of access: "every possible way" (LAC, 2003). They further note that they would like to be able to search for content:

- by date (in the case of events);
- by subject;
- geographically;
- by type of material (photographs, videos, text and so on);
- by teaching level.

Beyond these preferences, it should certainly be said here that teachers would like to have a flexible, adaptable **search engine** designed just for them that would allow advanced searches, in other words searches by a combination of criteria. As Patterson, Langlois Consultants (2003) note, "The first (suggestion) was the creation of a **search engine designed by and for Canadian teachers**. Such a site would direct teachers to content that would earn their colleagues' seal of approval and would be tailored to the curriculum, learning outcomes, and students' level. Of course, this site would need to be updated often to remain relevant." (Patterson, Langlois Consultants, 2003, p. 8).

Apart from the development of an efficient search engine, many teachers strongly encourage the creation of **a portal, or a learning object repository**,[16] a single gateway to content adapted to existing curriculum (Patterson, Langlois Consultants, 2003; Leaper, 2004). In addition to collecting relevant resources in one virtual location, it could also become a **forum for exchange between peers** and support a **virtual community** that would enable teachers to network with other teachers and exchange information, tricks of the trade, ideas and so on. Sharing with their colleagues seems fundamental for Canadian teachers, who also stressed the importance of setting up a **discussion forum** (LAC, 2003). Lastly, since "Obviously, there are important distinctions between how utility is prescribed in a site for teachers and how it is stipulated in one for students," (Patterson, Langlois Consultants, 2003), teachers said it would also be very useful to have a **similar site**, but one **designed for Canadian students**.

[16] A "learning object" is "a self-contained, stand-alone unit of instruction that generally contains content and a learning objective and it may include a learning assessment." (Treasury Board of Canada Secretariat, IMRC– E-Learning Metadata Sub-group, http://www.cio-dpi.gc.ca/im-gi/mwg-gtm/ems-sml/docs/2004/meta-profil/meta-profil10_e.asp, (consulted March 15, 2005)).

But again, what guidelines would teachers prescribe for the creation of such portals?[17]

*Sites for teachers and students*

- Linkage to curriculum;
- Adapted to students' abilities (developmental stages, appropriate reading level and so on).
- Attracting, establishing and maintaining interest (with unusual, different and captivating content);
- Adapted to students' cultural context (Francophone students outside Quebec, Aboriginal students and so on);
- Content designed for students for whom French is a second language;
- Multidisciplinary approaches;
- Reliable information;
- Specifically labelled for the target audience (purpose of the site clearly stated);
- Combining student- and teacher-oriented content, to ensure compatibility;
- Information that is easy to find.

*Sites for teachers*

- Lesson plans are very useful, especially when "tied in with the course subject, learning outcomes, grade level, and age" of the students;
- Printable handouts, particularly "quizzes, tests, and worksheets";
- Clear and precise content outlines;
- "Easily adaptable: teachers… appreciate sites catering to the easy transformation of content into teachable material… the idea of a learning object repository within which they could pick and choose texts, images, and various multimedia-derived content struck a chord with some teachers… The repository would be a great time-saver, to the extent that some described this as 'the site of their dreams'."[18]

*Sites for students*

- A variety of approaches to suit students' different learning styles;
- Interactivity;
- Multimedia content;
- Focussing on visual content;
- Engaging presentation;
- Simple in organization and layout;
- Free of inappropriate links.

[17] This section is based on the 2003 study by Patterson, Langlois Consultants (pp. 14-19).

[18] Note that such types of site already exist in Canada, but may still be unfamiliar to the teachers surveyed. Examples are: in science, *Enpairs.ca*, which hosts a unilingual French catalogue that facilitates searching for and sharing digital learning objects in French for the teaching of science at the secondary level (http://www.enpairs.ca/); for postsecondary levels, *MERLOT* (Multimedia Educational Resource for Learning and Online Teaching) (http://www.merlot.org/Home.po); and finally, *CAREO* (Campus Alberta Repository of Educational Objects) (http://www.careo.org/).

## Conclusion And Recommendations

At the end of this exercise, the inescapable conclusion was that before even considering the development of new online content for Canadian teachers and students, much work remains to be done. As we have seen, genuine adoption of ICTs and the Internet, an essential prior condition for the proper use of online resources, still lies ahead for many teachers.

In this context, and in order to ensure the integration of ICTs into teaching practice, it is important that the authorities (governments, ministries of education, school boards, schools and so on) take into consideration the professional and organizational constraints (time management, lack of support, training and so on) that teachers face. Once these obstacles to the adoption of ICTs have been eliminated and most teachers have the ability to make effective use of the Web, it will certainly be easier to produce a complete and accurate picture of their needs and expectations with regard to online educational resources.

The execution of this study has thus revealed that consultations with Canadian teachers and students about their needs for online content are as yet in their very early and tentative stages. As noted above, the studies we analyzed are few in number and in many cases represent the viewpoint of only a limited number of respondents. With that proviso, these studies were very enlightening on several aspects of the issue.

Combined with our review of the overall context in which the needs and expectations of Canadian teachers and students with regard to online content are to be considered, the analysis of these studies has enabled CEFRIO to formulate the following recommendations to the Department of Canadian Heritage.

### Recommendations

In general:[19]

1. Since the task is a substantial one, the Government of Canada should not attempt to do everything itself and assume sole responsibility for online educational resources. It should rather act as a facilitator and support the development of local initiatives that can be "exported" to other regions and contexts;
2. The federal government and Canada's provincial and territorial ministries of education should demonstrate genuine leadership in integrating ICTs into education and in getting teachers and students to adopt them;
3. Since that integration can come only through concerted action, there must be collaboration among the various partners involved: the Canadian government, ministries of education, school boards and other educational institutions, teachers, producers of content, accrediting bodies and centres for research;
4. The added value students derive from teaching and learning that integrate the new technologies and interactive educational content muse be clearly recognized;
5. To ensure the venture is successful, the organizational and professional constraints that are a reality for teachers, particularly lack of time, should be taken into consideration;
6. In a context where schools must cope with a lack of financial resources, the use of freeware[20] could also be considered as a way of supporting the integration of ICTs;
7. The creation of interactive educational content geared to curriculum, teaching and learning should be supported.

[19] Some of these recommendations are based in part on the brief submitted by Alliance Numeriqc to the Quebec Minister of State for Education and Employment in 2002. (*Priorité aux contenus éducatifs interactifs : le temps d'agir, mémoire présenté au ministre d'État à l'Éducation et à l'Emploi du Québec* [priority for educational content: time to act, brief submitted to the Quebec Minister of State for Education and Employment], 32 p. [on line], http://www.numeriqc.ca/etudes/PDF/Memoire_Education.pdf (consulted March 14, 2005))

[20] "[translation] Software that is delivered with its source code so that it can be copied, modified and redistributed, thereby evolving continuously into a more developed version, in a context of cooperative communal development." (OQLF, http://w3.olf.gouv.qc.ca/terminologie/fiches/8389988.htm (consulted March 17, 2005)).

In more practical terms:

8. The resources now available should be inventoried and publicized to teachers, who are often unaware of their existence. It is important to avoid reinventing the wheel, and to ensure better distribution and sharing of the educational content that is developed.
9. Content should be updated to meet the demands of the new curricula in use in the provinces and territories;
10. To correct the deficiencies noted by teachers, content should be developed o support their teaching efforts with regard to Aboriginal communities, major historical events and so on.
11. The better to catch the attention of young people, new content should incorporate interactivity and multimedia;
12. Although it is important to develop a variety of resources (text, photographs, maps and so on), videos and other visual materials, lesson plans with interactive components and turnkey lessons are the types of content for which teachers feel the greatest need;
13. Priority should be given to the development of new resources in French for Francophone students outside Quebec and students in French immersion;
14. Resources should be adapted to the characteristics of the students they are intended for: grade level, reading ability, mother tongue and so on.
15. It is important to establish clear links between the resources available to teachers and the curriculum for which they are responsible. Online resources must be consistent with all the learning goals of the curriculum.
16. Teachers can waste large amounts of time looking for relevant material on line; they need a search engine designed specifically for them. It should have advanced search functions, able to handle multiple search criteria;
17. A single portal should be created, bringing all available resources together in one virtual location. Some teachers see the portal as a repository of learning objects that would be directly usable.
18. Such sites already exist in Canada,[21] and the possibility of linking up with them should be considered;
19. The single point of entry should enable collaboration among peers (virtual communities of practitioners,[22] discussion groups and so on) and support the sharing of information, documents, tricks of the teacher's trade and so on.
20. Since the blog or weblog[23] is undoubtedly a tool of the future, consideration could be given to creating one that would stimulate teacher and student networking in Canada.[24]

[21] We are thinking here in particular of *Enpairs.ca* (http://www.enpairs.ca).

[22] According to the OQLF, a "virtual community of practitioners" is "[translation]an informal network of people whose areas of competence are complementary and who are involved in a common activity and use technologies to share their knowledge." (http://w3.olf.gouv.qc.ca/terminologie/fiches/8360873.htm, (consulted March 15, 2005)).

[23] "[translation] A Web site that takes the form of a dated personal diary with time-sensitive content that is regularly updated and enables the blogger to communicate personal ideas and impressions on a multitude of subjects, and publish an individual selection of texts and inside information, usually brief and sometimes containing links inviting the reader to comment**."** (OQLF, http://w3.olf.gouv.qc.ca/terminologie/fiches/8370242.htm (consulted March 17, 2005)).

[24] See for example the blog run by Mario Asselin, director of Institut St-Joseph, a private primary school in Quebec City (http://cyberportfolio.st-joseph.qc.ca/mario/ (consulted March 17, 2005)) or the ConstellationW3 site (http://www.constellationw3.com/carnet/ (consulted March 17, 2005)).

Lastly, if the Department of Canadian Heritage seeks a clearer picture of the needs and expectations of all Canadian teachers and students with regard to online educational resources, CEFRIO recommends that the Department itself conduct a separate study – or perhaps two studies – of the issue.[25]

[25] CEFRIO has developed solid expertise in surveys and would be happy to contribute to this broad-based study that would be quite unique not only here in Canada, but worldwide. Some of the Centre's larger studies have done much to establish its reputation in Canada. Here we should mention *NETendances,* the biggest study of Internet use in Quebec*, NetGouv*, a survey of online government services targeting individuals and businesses in Quebec, and *NetAdos*, a survey of teenage Internet use in Quebec. For more details on CEFRIO's various studies or to consult our findings, please go to the CEFRIO Web site:
http://www.infometre.cefrio.qc.ca/loupe/enquetes/enquetes.asp (consulted March 15, 2005).

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## Databases And Experts Consulted

### Databases

The databases listed below, some of which are fee-based, were consulted at Laval University, February 17, 2005.

***Association for the Advancement of Computing in Education (AACE) Digital Library***
http://www.aace.org/DL/index.cfm
The Digital Library is a valuable online resource of peer-reviewed and published international journal articles and proceedings papers on the latest research, developments and applications related to all aspects of Educational Technology and E-Learning.

***CPI.Q / Canadian Periodicals Index***
http://web3.infotrac.galegroup.com/itw/infomark/0/1/1/purl=rc6_CPI?sw_aep=crepuq_ulaval
Use this database to find articles from a comprehensive list of Canadian and international journals, magazines, selected sections of *The Globe and Mail*, Canadian biographies, and other reference content from Gale Group, all with a Canadian focus.

***Education abstracts***
Indexes and abstracts of education publications on such subjects as athletics, physical education, classroom computers, prayer in public schools, comparative education, psychology, teaching technologies, religious education, public funding, science and mathematics, language and linguistics, special education, literacy, teachers evaluation, multicultural and ethnic education, and vocational training.

***ERIC / Educational Resources Information Center***
http://www.eric.ed.gov/
The Education Resources Information Center (ERIC), sponsored by the Institute of Education Sciences (IES) of the U.S. Department of Education, produces the world's premier database of journal and non-journal education literature. The new ERIC online system, released September 2004, provides the public with a centralized ERIC Web site for searching the ERIC bibliographic database of more than 1.1 million citations going back to 1966. Effective October 1, more than 107,000 full-text non-journal documents (issued 1993-2004), previously available through fee-based services only, will be available for free.

***FRANCIS***
A multidisciplinary, multilingual bibliographic database for the humanities: art history, science history, linguistics, literature, philosophy, prehistory, religions; for social science: management, legal science and computer science, education, ethnology, geography, health, sociology and economics.

***ProQuest research library***
A complete collection of magazines, periodicals and newspapers providing information on a wide variety of general reference subjects.

**Subject-matter experts interviewed**

**Thierry Karsenti**, Associate Professor, Department of Psychopedagogy and Andragogy, Faculty of Education, University of Montreal and holder of the Canada research chair in ICTs and education

**Thérèse Laferrière**, Associate Professor, Department of Teaching and Learning Studies, Laval University

**Yves Lenoir**, Professor, Department of Preschool and Primary Education, Faculty of Education, University of Sherbrooke, and holder of the Canada research chair in pedagogical intervention.