Breaking Down Barriers: Teacher-Librarians as Partners in Internet Use in Canadian Schools

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In Canada, as in many countries, teachers are being encouraged to integrate information and communication technologies (ICT) such as the Internet into the curriculum. A study conducted in Canada in 1999-2002 examined Internet use in schools through interviews with technology leaders, through surveys of teachers and principals, and through case study investigations of three school districts, each in a different province of Canada. The case study data from the three districts was analyzed, using the NVivo software program, to address three main questions: (1) To what extent was teachers' use of the Internet consistent with "best practice," as described by Moersch (1999)? (2) What types of support systems appeared to be essential for effective Internet use in classrooms to occur? (3) What was the role of the teacher-librarian in contributing to effective Internet use in classrooms? The study showed that teachers were integrating the Internet into their teaching, but had not yet achieved "best practice," and that teacher-librarians were influential in supporting teachers' progress towards "best practice" in the use of the Internet in instruction.

Background to the Study

In many countries around the world, teachers are being encouraged to integrate information and communication technologies (ICT) into the curriculum. My research partner, Dr. Susan Gibson, and I have been investigating the use of one aspect of ICT, the Internet, since 1997. Across Canada are many initiatives for Internet use in education, including a nationally funded organization called SchoolNet that has been involved in teacher professional development and a limited amount of research on Internet use in schools. Although there is no national office of education that might coordinate such initiatives in Canada, each of the provincial and territorial governments are involved in Internet use initiatives. In Alberta, one of the western provinces in Canada, for example, the ministry of education has funded Internet connectivity for schools, developed an integrated curriculum for technology use in schools and joined with other educational stakeholders to support an Internet training program for teachers, the TELUS Learning Connection.

In spite of these initiatives, a two-year study (1997-1999) in Alberta schools found that while teachers and principals were excited by the potential of the Internet, many were overwhelmed by its breadth and complexity (Gibson & Oberg, 1997). Teachers, even experienced Internet users, had little knowledge of the search engines and search strategies needed to make efficient use of Internet resources. Teachers and administrators felt that they were not getting adequate support from their school districts for learning about the Internet. Learning about the Internet appeared to involve highly individualized and isolated activities, taking place on the edges of the lives of teachers and administrators. The role of "technology specialist" was developing in some of the schools, often it appeared at the expense of the role of the teacher-librarian.

There also emerged questions related to "best practice" in the use of the Internet. The use of the Internet seemed to be increasing, but was it being used in ways that enhanced student learning? Researchers and theorists in technological change suggest that "best practice" in the use of the Internet would be characterized: by re-conceptualization of the Internet from an instructional tool to a learning tool, by movement from teacher-centered to student-centered learning, by classroom learning consistent with how students learn, and by focusing on real-world problems and process learning (Moersch, 1998).

Research Questions

The Alberta study raised questions for my research partner and me about the development of policies and practices related to technology infrastructure and teacher learning across the country. We obtained funding from the Social Sciences and Humanities Research Council of Canada for a three-year study of Internet use in Canadian schools. The study had a three-part focus: (1) an assessment of the overall national picture of Internet use in schools, (2) a Canada-wide survey of schools in the provinces and territories; and (3) case studies of Internet use in three school districts, each in a different province or territory.

This paper reports on one aspect of the third part of this study. In this part of the study, we were interested in exploring questions such as these:

1. To what extent was teachers' use of the Internet consistent with "best practice"?
2. What types of support systems appeared to be essential for effective Internet use in classrooms to occur?
3. What was the role of the teacher-librarian in contributing to effective Internet use in classrooms?

Research Methodology

The three-part study looked both at visions and policy and the realities of everyday practice in schools. To obtain an assessment of the overall national picture of Internet use in schools, with a focus on vision and policy, we interviewed representatives of the government departments responsible for educational planning and of the teachers' professional associations which represent teachers' interests and rights. To obtain an overall picture of what was happening in schools we surveyed principals and teachers using a mailed questionnaire. To gain a more detailed understanding of what was happening in schools across the country, we conducted case study investigations in three school districts in three very different parts of the country. The three school districts were chosen through an analysis of school based web sites as well as their involvement with Internet projects such as SchoolNet's GrassRoots program.

The three school districts were located across Canada: one in the Prairie Provinces, one in Central Canada, and one in the Atlantic Provinces. Teachers working with students in Grades 5, 8 and 11 were interviewed, and observations of the classrooms were undertaken. Additional interviews were conducted with members of the schools' administrative staff and with those providing technical support and/or leadership in the integration of the Internet in curriculum such as technology lead teachers and teacher-librarians. The intent of the case study investigations was to describe and analyze examples of best practice in Internet use in Grade 5, 8, and 11 classrooms.

We worked in and with each of the three districts over a two-year period. Along with a research assistant, we spent one week in each district on two separate occasions (Spring 2001 and Winter 2002). In between the two visits to each school district, we kept in contact with the participants by email. After each visit, participants were given opportunities to respond to the summary reports written by the researchers and to review the conclusions, implications, and recommendations generated by the researchers. The analysis of the case study data, including interview transcripts, field notes, and summary reports, was facilitated by the use of the qualitative software, NVivo.

Readers should be aware that the findings of this cannot be generalizable because of the small numbers of study participants and because of the qualitative nature of the case study research methodology used in this study. However, the study findings may resonate with some of the readers of this study. Readers should consider whether or not the situations described in the case studies are similar enough to their own situations in order to be able to apply the findings of this study to their situations. Readers should also consider whether explanations other than those proposed by the researcher and/or by the study participants might be possible and/or more credible.

Case Study Reports

The case study investigations explored the policies and processes schools and districts in three provinces have enacted in order to overcome some of the obstacles associated with Internet use as they attempt to integrate it into their curriculum. The case study data collection has been completed and summary reports have been approved by the research participants. In this section of the paper, I provide three case study reports in brief.

School District No. 1

Prairie School District, located in a small city, had developed a 3-year technology plan with the goal of advancing technology use in learning beyond traditional models of teaching centered on teacher instruction to incorporate teaching models focused on student learning including cooperative learning and guided inquiry approaches. A position had been established within the district's central office to coordinate and monitor technology growth in the school district. Teachers were provided with opportunities to learn to use technology as a tool through district office workshops, a district wide in-service and a yearly technology symposium. At the school level, to ensure sufficient instructional support, school-based technology support positions have also been established in addition to the teacher-librarian positions. The support teacher was expected to assist teachers in moving from entry-level skills of technology use in teaching to integrate technology outcomes with curricular outcomes.

The Grade 5 class involved in the study had access to several computers in the classroom as well as a computer lab. Computer access was provided in the same way for the Grade 8 and Grade 11 classes. The Grade 5 teacher planned one to two Internet projects a year that tied directly to curriculum themes and objectives. The teacher viewed the Internet as a resource that connected students to topics not accessible in traditional print mediums. For example, as part of a novel study, the students in Grade 5 followed the Iditirod Dog Sled race in the Northwest Territories. In the grade 8 class involved in the study, at the time of the visit, the students were working on a novel study. The Internet was used as a source of information to access other reviews and related material associated with the novel, and students were required to develop a web page that could include links to Internet websites about the book or author. At the grade 11 level, three teachers responsible for teaching social studies were included in the study. At the time of the visit, the grade 11 teachers were implementing a unit developed by one of them on the world wars. Although projects within the grade 11 classrooms generally used the Internet only as an information gathering tool, teachers encouraged higher level thinking through directed questioning techniques that required students to analyze, evaluate and synthesize the information presented in class with previous course content, information accessed on the Internet, and personal experience. Additionally, students were guided to differentiate between opinions and facts both during discussions and in the information obtained and sites visited when accessing material on the Internet.

School District No. 2

Central School District, encompassing a major city as well as the surrounding rural area, had not yet developed an overall technology plan. However, it did have a district policy on responsible use of the Internet, and technology learning outcomes were gradually being integrated into the subject area curriculum documents. Several positions had been established within the district's central office to coordinate and support technology growth in the school district. Teachers were provided with opportunities to learn to use technology as a tool through district office workshops, but increasingly teachers were asking for assistance with learning to integrate technology into the curriculum.

At the school level, computer contact teacher positions provided communication with district-level technicians and consultants. In addition, technology coaches who had been hired and trained by the district were working in classrooms with experienced teachers who wanted assistance with technology integration. There were teacher-librarian positions at the high school level, but not at the elementary and junior high school levels, due to severe budget reductions.

All of the classes involved in the study had access to computers in the classroom as well as computer labs. The Grade 5 class was using the Internet as a research tool, for example, to find information about slavery as part of a novel study and to access virtual tours to places such as the Louvre. The class also involved in a GrassRoots project on owls requiring the planning and construction of a website. The Grade 8 class had been involved in a GrassRoots projects on

water resources in the world. The students used the Internet to find information, making notes, and then producing a web page to present their information. The Grade 11 class was using an inquiry-based approach to studying ancient civilizations.

The teachers were supporting students in developing research skills such as choosing and vetting websites and presentation skills, both oral and PowerPoint presentations. Students were also encouraged to engage in reflection throughout the learning process. The new teacher-librarian at the high school was emphasizing resource-based learning by making teachers aware of some of the resources the library and of the Internet. The librarian had also provided support in locating websites for teachers and building the research skills of the Grade 11 students.

School District No. 3

Atlantic School District, encompassing both urban and rural areas, had developed an overall technology plan working in close collaboration with the ministry of education by the end of the second year of our study. The plan addressed technology in terms of equity, connectivity and professional development. The district's technology consultant worked with the ministry of education, supported the technology contact teachers in the schools, and coordinated technology planning within the district. Like Central School District, Atlantic School District had developed a program of technology coaches or mentors, hired and trained by the district, who worked in classrooms with experienced teachers who wanted assistance with technology integration.

There were teacher-librarian positions in all the schools in the district. The district had worked with the ministry of education to gain several additional support programs to provide more computers and more computer technicians in the schools. Teachers were provided with opportunities to learn to use technology as a tool through working with in-school technology mentors and teacher-librarians as well as through participating in district and ministry workshops.

The Grade 5 class was working on an integrated weather unit that involved cooperative planning between the two Grade 5 teachers and the teacher-librarian. The students, working in groups, rotated through "stations' or activity centers involving story writing, a novel study, science experiments, graphing, Internet research, model making and drawing isobar maps. Students used the Internet to access websites about weather to respond to various problems and to communicate with an author who had been to speak to the students as part of the story writing activity. The Grade 8 class was working on a collaborative project to create an on-line story for children in Grades 2 and 3; they mentored younger students on how to use the e-mail, create slide presentations and develop websites.

Other Grade 8 projects included a LEGO Mindstorm Robotics unit; a news broadcast to other schools using digital video editing and video conferencing, an online poetry unit, and a "Fathers of Confederation" WebQuest unit. The teachers designed the units but students were required to publish and share their work online. Students in Grade 11 had completed an Internet based research project for their computer class. Their chemistry and biology teacher used the Internet for visual resources for teaching; she has had her students create a chemistry tutor website and design a Corel presentation to explain a science phenomena. In one of several GrassRoots projects, the students investigated careers in science. The students interviewed people who were working in various science-related careers through e-mail, then organized and synthesized the information and posted it on the Internet.

Findings

Selected findings from the cross-case data analysis are presented here, in relation to differences in teachers' Internet use, differences in support systems for teachers' Internet use, and differences in the role of the teacher-librarian in contributing to teachers' Internet use in those schools and districts.

Teachers Internet Use

The analysis of teachers' use of the Internet in the Grade 5, 8, and 11 classrooms across the three case study districts was based on Moersch's Stages of Instructional Practice (1999) presented in Table 1. Most of the instructional practices observed in the case study classrooms would fit into Stage 2 of Moersch's model. In lessons where the Internet was being used, the content was organized around teacher-based questions and interests, but the students were actively engaged in problem-solving and/or investigative activities. The teachers were acting as facilitators and resource persons for the students as they used the Internet to find information from websites or from communication with experts. In a few classrooms, the Internet was being used to introduce the students to events and places they could not likely encounter in any other way (e.g., a virtual tour of the Louvre and daily news coverage of the Iditirod race). In a few of the classrooms, the teachers were assessing students' work using performance tasks and open-ended or problem-based questions. The most frequent observation of the elements characteristic of Stage 3 instructional practices classrooms occurred in classrooms in District 3. In these classrooms, the content was more likely to be organized around student questions (e.g., deciding what questions to ask an author or a scientist) and the topics for inquiry or problem-solving were more hands-on and closer to student interests and concerns (e.g., building robots, developing news broadcasts, helping each other to learn science content, and teaching younger children technology skills). The Internet was more frequently used in the classrooms observed in District 3 for communicating the results of student work to their peers and to the wider community.

Support Systems for Teachers Internet Use

The analysis of the types of support systems essential for effective Internet use in classrooms was based on the findings from several previous studies (Gibson & Oberg, 1997, 1998, 1999; Oberg & Gibson, 1998) in which teachers reported that school-based individualized approaches to learning about the Internet were more effective for them than were school, district or ministry sponsored workshops or in-services. The school-based approaches they reported as most frequently as being effective for supporting their learning were: trial-and-error, working with a colleague, working with students, and working with a designated staff technology specialist. In all of the case study districts, teachers had access to school, district and ministry sponsored workshops or in-services. For District 1 and 2, the ministry sponsored workshops and inservices were provided by ministry-sponsored arms-length professional development agencies, while in District 3, these were provided directly by ministry staff. In all of the case study districts, teachers had access to one or more designated staff technology specialists providing in-school support for keeping the computers and networks in working order as well as for helping teachers to learn about the Internet and about how to use it in their classrooms. The only major difference between the districts was the availability of teacher-librarians in the case study schools. Only in District 3 were there teacher-librarians in all of the case study schools. Although in the past there had been teacher-librarians in the schools of Districts 1 and 2, only the high school teacher-librarians remained and even in the high schools the teacher-librarian staffing level was much lower than it had been in the past (a reduction of more than 50% from a decade ago in one of the high schools).

Table 1. Stages of Instructional Practices

Element	Stage 1	Stage 2	Stage 3
Content	Content organized and delivered by traditional scope and sequence; focus on teacher-based questions	Concept and processes organized and presented based on interests of teacher; learner, or both	Concepts and processes emerge based on learner's needs; focus on learner-based questions
Learning Materials	Organized by content; heavy reliance on sequential instructional materials	Emphasis on hand-on investigations and predefined problem-solving activities	Determined by problem areas understudy; extensive and diversified resources
Learning Activities	Traditional verbal activities; problem-solving activities (e.g., worksheets, story problems)	Emphasis on student's active role; problem-solving activities with little or no connection to broad concept or theme (e.g., verification lab from science kit)	Emphasis on student activism and investigation and resolution of issues; authentic hand-on inquiry related to problem under investigation focus on experimental learning
Teaching Strategies	Co-learner or facilitator or both	Expository approach	Facilitator resource
Evaluation	Traditional evaluation practices including multiple-choice, short-answers; and true-or-false questions; questions concept; use of portfolios	Uses multiple assessment strategies; including performance tasks and open-ended and problem-based open-ended questions; performance	Multiple assessment strategies integrated authentically throughout the unit and linked to problem or tasks, self-analysis and peer review
Technology	Drill-and-practice computer-based programs (e.g., integrated learning systems) and computer games; little connection between technology use and overall concept or topic searches	Technology integrated into isolated hands-on experiences (e.g., tabulating and graphing data to analyze a survey or experiment; information using the internet or a CD-ROM)	Expanded view of technology as process, product, and tool to find solutions to authentic problems communicate results and retrieve information (e.g., spreadsheets, graphs, probes, databases, CD-ROM-based simulations, Web-page development)

The Role of the Teacher-Librarian in Internet Use

Most studies of Internet use in schools have not addressed the role of the teacher-librarians, but in this study the district with teacher-librarians in all of its schools was further along in terms of "best practice" in the use of the Internet. This might suggest that the teacher-librarians may have had an influential role in the instructional practice of the classrooms. The three case study districts had similar support systems in place for teachers' Internet use, except in terms of the availability of teacher-librarians. Several other factors that might have been influential were examined, such as the extent of involvement in GrassRoots project work, the number and quality of computers available in the districts, the role of the ministry in providing in-services to teachers, the provision of technical support to schools, and presence of technology plans. However, all the districts were involved in GrassRoots project work, all had provided some technical support to schools, and all had some form of technology plan in place. There were differences in the other two areas: access to computer power and the professional development role of the ministry of education. District 1 had a slight advantage over the other two districts in terms of the number and quality of computers available, but none of the districts had high-speed Internet access available in all schools and all were dealing with having many out-dated computers for which they lacked replacement funding. There appeared to be little difference in the nature of ministry-level in-services provided to teachers, but District 3 may have had the advantage here since its ministry provided in-services directly to teachers while the other two ministries had delegated this work to arms-length professional

development agencies. Finding no clear indication of alternate explanations for the differences in instructional practice, I turned to the words of the study participants to look for possible explanations for the differences among the case study districts in teacher-librarian staffing and then for any indications of what the teacher-librarian might bring to instructional practice in the use of the Internet.

Differences in teacher-librarian staffing.

District leaders explained the three districts' approaches to teacher-librarian staffing (and to library resources generally) in these ways:

District 1

When [teacher-librarian time] was mandated by the district and the staffing was put in place, everybody had the same allocation of teacher-librarian time proportionate to their student enrolment. When we turned to site-based management and those decisions were made at the school level, we've seen some schools who have maintained and maybe even expanded the amount of time allocated to a teacher-librarian. Others have cut right back and eliminated the position altogether, depending upon their unique circumstances. … I'd say some of the most successful technology integration that I have seen is where the teacher-librarian is a technology lead teacher, and that makes some sense if you think about it, of course.

District 2

Our libraries, with the lack of funding, have fallen so far behind. … We don't have teacher-librarians. … We used to. We remember them fondly. … At the elementary level, we have library technicians who do their best job to maintain the collection. That's all. [At the high school or junior high level], most of them have teacher-librarians or have a library technician, but that's even under attack now. Proposed in this budget was a cutback in technicians at the secondary level, and so their choice is either to cut their library technician, their guidance technician, or their computer technician. … There's no funding provided for it [the ministry is actually targeting their funding on technology]. So it didn't flow out of the librarian piece; it flowed specifically because they developed the curriculum unit planner as a technology tool.

District 3

Even prior to the last five years where technology has become so much a part of the way things are done in schools, in this province, and this district in particular, we're really heavily committed to resource-based learning. And that's been a focus of the Department of Education; it's been a focus of schools as well. … The teacher-librarians or resource librarians have been really a part of the planning curriculum in this district for at least the past eight to ten years, and I think technology just kind of has enhanced that role. Fortunately for us, most of our teacher-librarians are the people who have also embraced technology, and so they're not only using the resources in the library; they're using the library outside of the library, the online resources as well.

The teacher-librarians views of their roles in the use of the Internet.

Teacher-librarians in the three districts described their roles in these ways:

District 1

The district has made the decision [that at the high school level, teacher-librarians are going to provide the technology leader role] … the role and the expectations of the teacher-librarian's position has changed over the years and has become much more technology focused than it certainly has been in the past. … teachers come to me or tend to rely on me to provide instruction and assistance in technology-oriented issues … [I am doing] much more specific kind of skill development and training the teachers, including things like assisting teachers to develop individual links pages, for instance, and assistance with other very specific technology-related instruction. The most recent one, just last week, was working with a teacher to provide a kind of mentorship in doing PowerPoint presentations. … Now we tend to concentrate, it seems, not as much on the actual research process as more discrete skills and a wider variety of different types of skills, whether it's constructing a database [or] presentation skills, which are still part of the research process, but it's not a part of that whole strand of skills that you used to develop over a number of different lessons. (High school teacher librarian)

District 2

In terms of technology, I think one of my most important functions has been to make teachers aware of some of the resources that we do have in the library. We had subscriptions to … online databases, and a number of teachers have commented after bringing their students into the library and seeing them using those tools how great they were. And, in fact, they're tools that have been available for a number of years, and people simply weren't aware of them …. I haven't had any role in [technology planning] other than canceling our subscription to Electric Library because the price was going up and we have no guarantee of budget next year … I'm trying to, at this point, having been in the library for less than a year, I'm trying to watch for what teachers bring students in to do that might give me the opportunity to build research lessons that will complement what they're already doing. And that, I think, is part of the challenge in the library to see those opportunities to be constructive and not intrusive in what the teachers want to do anyhow. … I think the most effective professional development comes when the teachers arrive with the students, wanting to do something, and in the course of pointing the students in the right direction, the teachers [learn the skill] … Then the next time they do it themselves. (High school teacher-librarian)

District 3

I want to begin with my frustration of being a book stamper and reads-aloud [person]. … I'm a teacher-librarian, so my goal was to change the traditional idea of the librarian, to change that to a teacher. …. So I scrounged around for different ideas of what to do with the classes, and I was able to persuade the principal to let me use the labæwe didn't have computers in the library, only the labæto let me use the lab to work with teachers cooperatively to develop stations, learning stations and learning centers, using the Internet, as well as books. … So there were the only two teachers that first year, and it was great! … So then the following year I was able to encourage other teachers who saw what [the first two teachers] were doing, so word spreads, and I was able to convince them too, "This is a good thing. We're doing curriculum; we're doing classroom work, but yet it's out of the classroom. We're using the Internet." (Elementary teacher-librarian)

Others views of the teacher-librarians roles in the use of the Internet.

In the case study schools in District 1 and District 2, the role of the teacher-librarian in the use of the Internet was rarely mentioned. This was not surprising since two of the three schools in each of these districts had no teacher-librarian staffing.

District 1

In District 1, the library was mentioned as source of useful resources and as a place for students rather than for teachers. In the high school in District 1, the teacher-librarian was acknowledged as a leader in technology:

I think [my role as a principal in supporting the use of the Internet is] also very much encouraging it through [the teacher-librarian] in the library and the projects that he's been involved in over the years. I guess to my way of thinking … that[my leadership means] getting out of the way of the individuals that want to do it, and so any time if a person has an idea and seems to have the motivation to try something, that we try and do whatever we can, and if it means providing a sub for them to go to something or to meet with somebody or to meet with other people on staff, providing coverage, we'll do that. (High school principal)

District 2

In District 2, the library was mentioned as a source of outdated resources and as a place for having an Internet connection. On occasion, the teacher-librarian was mentioned in terms of roles formerly carried out by teacher-librarians:

My job [as computer contact teacher] is just to sort of share [websites found by the district people] with everyone else [in the school]. I'm not necessarily the one that's going off and finding that information, whereas I think the teacher-librarians may have been in that role. (Junior high school teacher)

District 3

In District 3, the role of the teacher-librarian in instruction was mentioned frequently by district leaders, by principals, and by teachers. Here is a sample of their comments:

> Our teacher-librarians or resource librarians have very much become a part of what teachers do on a daily basis. It's not unusual to go into any school and see the teacher-librarian sitting down at a grade-level meeting. If you have three Grade 3 teachers, you'll find the teacher-librarian sitting with them and talking about planning that particular theme or that particular section. (District leader)

> The traditional library could get lost in this whole [technology] shuffle. That's why I'm really glad [the teacher-librarian]'s here, because she's very strong in the library part as well as the technology. … with the resource center as being part of the cooperative venture in teaching, there's units of study, so we don't schedule in library classes any more. The classes are scheduled in according to where they are in units and so forth, so a Grade 2 or 3 class may be in there every day for two or three weeks, and then not be in there for a month, depending on what's going on. … And there's our resource librarian, who is very comfortable and very capable and very approachable and is supporting, as ongoing support. So when [teachers] go through a unit [with technology] and it's successful, that encourages them to try something else. That's basically how we're moving. (Junior high principal)

> If I was to get somebody to come in to do a session on [using the Internet] … I would go through [the teacher-librarian] because she's the backbone of the Internet and the library services there. … because I know there's lots of times if you say, "I'd like to have some information on this here," and it's usually up to her to find it, and you go check with [the teacher-librarian]. If she doesn't know where it is, she'll go find it. She'll have it for you within a short time. (Elementary teacher)

However, it is important to note that not all teacher-librarians in the schools in District 3 were involved in helping teachers to use technology. For example, at the high school, the library had the oldest computers, and the leadership in technology had been left to the computer teachers:

> our librarian … doesn't have as much access herself to the computers as the computer teachers do because we have actual specific courses. So it kind of goes through the people who are teaching computers. If you teach computers, you're free game for anyone who wants to know anything. So if you teach ITC … they'll catch you as you're walking by, as you're getting your lunch, as you're going from class to class; or if you're going to a staff meeting, they'll ask there. It's catch as catch can. There's no real collaborative plan.

Discussion

The cross-case analysis of the case study data revealed some differences across the three districts in how teachers use the Internet, but in only a few classrooms did we see evidence of Moersch's Stage 3 Instructional practices, that is, the kind of practice described by this District 3 teacher:

> Maybe I can talk more about my own sort of personal beliefs and my own sort of personal style. I would like to see my students sort of working collaboratively, I guess, and I'd like to just take on a role of facilitator, where I'm not talking to the class as a whole even. In fact, I probably quite rarely even did that, but where I've got the students working on different activities where they're finding information. I'm basically just sort of directing them, giving them, I guess, the teacher-as-facilitator role more than anything. But the students where they're sort of really motivated in what they're doing. … I think it's not so much the topic, because you cover the same topic that you've done for years … if it's sort of presented in a way that will motivate the students, and that's obviously one of the age-old challenges for a teacher to do. (Junior high teacher)

The cross-case analysis also revealed several differences in the nature of support systems provided to assist teachers in Internet use. In all three districts, support and direction at the level of infrastructure was evident in the coordinated efforts between school and district levels to attend to the technological needs of the district as a whole and for each school in particular. Unfortunately, a strong start in District 2 was being lost due to harsh budgetary reductions being made by the ministry of education; the lack of technology plans at both district and school levels in District 2 added to their struggles to attain an effective, coordinated, and successful implementation of the Internet and other technologies. With respect to instruction, in all three districts teachers were supported in learning how to use the Internet, how to integrate the Internet into curriculum, and in implementing technology outcomes.

Support included varied professional development opportunities at the district level as well as that provided at the school level by technology support teachers.

In general, where there were teacher-librarians, the Internet was being most frequently integrated into to teaching and learning using collaborative and creative approaches. This was not the case in the high schools in the study, even though each had teacher-librarian staffing. This disappointing finding can be explained by a number of factors, two of which appear to be most important: (1) the high schools had very low levels of teacher-librarian staffing for the number and diversity of students, teachers, and programs and (2) the high schools saw the role of the teacher-librarian as either the traditional library role (planning resource-based learning programs collaboratively with teachers) or as the new technology leader role (providing professional development in technology skills for teachers), not as a combination of these roles. Although in one of the high schools, there was evidence of some students being involved in innovative and exciting learning using the Internet, this was restricted to small groups of students, primarily those involved in computer studies and science courses. There was not the collaborative, whole-school approach that appeared to be more the norm in the elementary and junior high schools with teacher-librarian staffing.

Research has identified a number of factors that appear to be crucial in enhancing teachers' Internet use: easy access to the technology needed to use the Internet; time for to learn the intricacies of the Internet; opportunities to engage in guided exploration of the Internet; opportunities for collegial sharing of integration strategies; access to one-on-one support from information and/or technology specialists; and support for teachers' learning about the use of the Internet provided by the school, the district, and the ministry of education. This case study provides evidence that teacher-librarians can be influential in enhancing teachers' Internet use, especially if they have appropriate time allocations for their work as teacher-librarians and if they and their schools are willing to expand their traditional library role to include and embrace the new technology leader role. This professional development and leadership role for teacher-librarians is one that is supported by many principals (see, for example, Henri, Hay & Oberg, 2002) and one that has been found to be correlated with improved student achievement (see, for example, Lance, Rodney & Hamilton-Pennell, 2000). The challenge for teacher-librarians is to take up and to work to enhance that leadership role and, for school library educators, to prepare teacher-librarians to do so.

References

Gibson, S., & Oberg, D. (1997). Two studies of teacher learning about Internet use. *International Electronic Journal for Leadership in Learning,* 3(3). Retrieved from http://www.acs.ucalgary.ca/~iejll

Gibson, S., & Oberg, D. (1998). Learning to use the Internet: A study of teaching and learning through collaborative research partnerships. *Alberta Journal of Educational Research,* 44(2), 239-241.

Gibson, S., & Oberg, D. (1999). What's happening with Internet use in Alberta schools? *Alberta Journal of Educational Research,* 65(3), 239-252.

Henri, J., Hay, L., & Oberg, D. (2002). An international study on principal influence and information services in schools: Synergy in themes and methods. *School Libraries Worldwide,* 8(1), 49-70.

Lance, K. C., Rodney, M. J., & Hamilton-Pennell, C. (April, 2000). *How school librarians help kids achieve standards: The second Colorado study. San Jose,* CA: Hi Willow Research.

Moersch, C. (1998). Enhancing students' thinking skills: Exploring model technology integration sites. *Learning and Leading with Technology,* 25(6), 50-53.

Moersch, C. (1999). Assessing current technology use in the classroom: A key to efficient staff development and technology planning. *Learning and Leading with Technology,* 28(8), 40-49.

Oberg, D., & Gibson, S. (1998). Teachers' concerns about the Internet: Implications for teacher librarians. *Scan,* 17(3), 48-53.

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