Theme Section
Extending the Reach of the School Library

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It is amazing to reflect that in little over a decade, we have seen the general introduction and adoption of CD-ROM and other digital multimedia, the Internet, online databases and information systems. Web-accessible library and museum collections. Web-based resources and access tools, online discussion forums, chat channels, and personally tailored Web portals—all available at the fingertips of the school students who are being educated in this rich information and communications technology (ICT) environment. Whether a school is well resourced with technology or not, the point remains that one of the most significant technological revolutions for education is underway since the progression from oral to print and book-based teaching. The integration of ICT in schools now seems to demand new curricula and pedagogy, an examination of the visual and information literacy challenges posed, and a realignment of learning goals and assessment practices. Educators are challenged to rethink their basic tenets, to deploy the new technologies in creative and productive ways, and to restructure schooling to respond constructively and progressively to the technological and social changes that ICT creates (Kellner, 2002).

School libraries are also in the process of fundamental change brought about by these radical developments in technology. Together, teaching, learning, and technology form the context of education in the 21st century, challenging our school libraries to move beyond the physical bibliographic environment by extending the reach of the school library both within and beyond the immediate school learning community by utilizing ICT.

Meaningful Learning
The capacity of ICT to allow for the integration of multiple and immediate resources into a teaching program, to facilitate the processing of complex information, all in a global framework for knowledge and understanding, makes it a powerful tool indeed. ICT can increase the productivity of students as they work toward attaining their learning outcomes, and more particularly, enable students to become active and experiential learners. ICT may also be nothing more than the automated version of the paintbox or pencil case, changing nothing other than the presentation medium of school projects.

ICT clearly brings to the forefront the debate about education as the transmission of information versus education as a holistic authentic learning

experience. We might call this experience *meaningful learning* and include in the concept the process of acquiring and honing all the skills needed to learn, seek out, and engage with knowledge. Meaningful learning requires knowledge to be constructed by the learner, not transmitted from the teacher to the student (Jonassen, Peck, & Wilson, 1999). Meaningful learning occurs when learners actively interpret their experience using internal, cognitive operations. And because students learn from thinking about what they are doing, the teacher's role becomes that of stimulating and supporting activities that engage learners in thinking (Bhattacharya, 2002).

The personal interaction with our students remains critically important while they learn the complexities and heuristics of thinking, problem-solving, and interaction with the particular domains of knowledge captured by each of their school subjects. ICT does not replace, but changes the experience of learning, extending learning choices and expanding learning options beyond the limitations of the classroom (Rosenberg, 2001)

Indeed, to be a leader in learning strategies in an era of digital learning is to acknowledge the changed educational paradigm of ICT being actively used as a cognitive tool through mediated intervention by the teacher in order to support metacognition: a conscious reflection by learners of their own learning.

As ICT becomes an "organic" part of the learner's environment, we would expect technology, used as a cognitive tool to:
- Enhance thinking, problem-solving, and learning;
- Support construction of robust mental models;
- Be used for contextual and developmental activities;
- Encourage the achievement of intellectual curiosity;
- Support development of lifelong competences in learning—knowledge, skills, and attitudes.

School Libraries and Student Learning

The five articles included in this theme section draw our attention to particular areas of development in school libraries and the issues and considerations involved in each for supporting student learning. All include ICT as part of the learner's environment, although each investigates different aspects of school library services.

Knowing that a key role of school libraries is to organize and provide access to information. Holly Gunn takes a closer look at the place and purpose of *virtual libraries* as a learning space. Many school libraries choose to extend their services and their learning space by providing access to resources online and by customizing information to suit the age and learning needs of their students. School Libraries Online, the IASL information resource, demonstrates a virtual library service to teacher librarians around the world and provides information resources to support school librarians in creating and managing their own virtual library service. Each month a new

school library is added to the list of winners for library Web pages, or virtual libraries, demonstrating that there are many ways of creating and managing a virtual library.

A virtual library can provide a framework for curricular goals and resources, instructional practices, assessments, and customized learning opportunities for all learners. Gunn discusses these constructed environments and highlights the importance of ICT being used to craft a virtual library as a venue for higher-level thinking, problem-solving, decision-making, critical thinking, and creativity.

Traditional face-to-face classrooms are being transformed by the use of ICT. Combes and Sekulla demonstrate how a successful partnership between teachers and teacher librarian can lead to the creation of a holistic online curriculum. Their article addresses the issues of ICT and classroom pedagogy, structures for supporting student needs and learning styles, and the processes involved in delivering curriculum and support materials using a Web-based interface. Through this interface, students can access their personal workspace and engage in cognitive interaction with information and with each other at any time. The online experience at Sevenoaks College is designed to work for both the cognitive and affective domains of learning, and extends the use of ICT well beyond a "books on screen" didactic approach to learning. Of particular interest is how the learning simulation *Moldarvia* has facilitated involvement with authentic materials that resonate with the learner's personal understanding and concerns.

Although Sevenoaks Senior College has a virtual library, it also has a college intranet: a managed arrangement for accessing and distributing information and learning opportunities. When selecting and designing an online learning environment, it is important to begin by considering the student. What media and online delivery technologies are used will depend on the technology development of a school and the media and online delivery technologies considered accessible and affordable.

Sevenoaks College uses an intranet content management system for its curriculum delivery called WebCT. Many systems are available as proprietary or open-source products (no licensing fees), assembled on a database engine with a Web-based front end, incorporating WYSIWYG tools for management. These represent the mature phase of intranet development beyond the virtual library or intranet that has been designed only as a Web site using Web-authoring tools, and that requires specialized ICT skills for development and maintenance.

The research article by Maureen Carter explores the key role of the school librarian in an intranet environment in Scottish schools. Around the world, education authorities and schools themselves are adopting intranet technology in one form or another, making this new field a critical one for school librarians to become involved with. Establishing an intranet is complex, requires careful collaboration and planning, and should support meaningful

learning by leveraging the cognitive functions of ICT, as well as making use of the administrative and management functions available.

What might a "mature," fully functional and responsive intranet offer? Call it the Portal to Everything About Your School: an education portal consistent with the philosophy of access anywhere, any time, with teachers and students able to access personal folders and learning material securely from any location in the world. It makes sense to choose a solution that provides cross-platform and cross-system functionality.

Essentially, it would be worth incorporating the following features into a future-centered school intranet:

- Database-driven with a Web view front end;
- Navigation and use of the intranet that is simple and intuitive;
- Tailored to merge with school administration and library systems;
- Requiring only standard computer navigation skills, rather than Web site design
- skills;
- Data-mining capacity through associated query languages, which utilizes the metadata information, embedded in each item in the curriculum and administration resource repositories;
- Collaboration tools for sharing documents in one central location;
- Group calendar(s) informing various groups of activities, appointments, and meetings;
- Contacts directory;
- Group discussion forums and virtual teaching spaces for student- or staff-initiated activities and classes;
- Easy creation of flexible online learning environments;
- Curriculum framework-planning tool;
- Forum for computer-based training and professional development;
- Task manager for projects and events;
- Group links and personal links to online resources tailored to individual or group log-in;
- Group announcements to parents, classes, tutor groups, teachers, faculties, clubs, committees, and so forth;
- E-mail integrated into school administration and communications systems;
- Extranet functionality for select partners, alumni, or community groups;
- Secure encryption for extra-level security to guarantee privacy in collaboration with colleagues;
- Flexible administration of groups for each department, committee, team, and so forth represented on the intranet, allowing access permission at the group or individual level;
- Personal customization of the look and feel of the intranet;
- Etc!

We have a challenge before us. Carter's article shows us that school librarians might be involved in an intranet as builder/designers, managers

mediators and packagers, creators of unique content, trainers, and providers of information skills support. In addition to this, the article by Combes and Sekulla also shows us just how effective school librarians can be in managing ICT infrastructure and associated knowledge processes, and collaborating to create unique online learning experiences. Whatever decisions are being made in a school, school librarians must work at all costs to retain cognitive individualization as the focus for development of school intranet systems.

Of course, what school librarians are engaged in, without necessarily realizing it, is the process of knowledge management. Jennifer Cram provides us with a thorough review of current knowledge management and cognition literature. The article clearly articulates the value of understanding the cognitive aspects of knowledge acquisition and sharing for the provision of virtual library or intranet services. More than this, it provides us with an opportunity to reconsider our understanding of design and delivery of virtual services in schools in the context of the characteristics of knowledge.

In analyzing the range of viewpoints of how library and information professionals perceive knowledge management, Southon and Todd (2001) found that views were fragmented, focusing on pieces of the whole—such as technology, knowledge or information objects, or specific information management processes—rather than portraying a more holistic notion. There were few exceptions to the fragmented view, begging the question of how well school librarians would conceptualize knowledge management in a school context.

Todd (1999), in examining the possibilities for knowledge organization in schools, reminds us that we must recognize that it takes time to nurture an environment that fosters knowledge creation and sharing. It also takes strong leadership and active promotion of successes. By targeting key needs and doing something tangible about those needs we are helping to build commitment to ongoing action. Knowledge management needs to be taken seriously as an issue by school librarians; researched, understood, and evaluated in order to ensure effective development of library services and the role of the school librarian.

School libraries everywhere, as part the educational purpose of the school, are engaged in nurturing learning; monitoring and measuring learning achievement; adopting new or different pedagogical approaches; and focusing on knowledge generation, higher-order thinking, technological literacy, and social-emotional outcomes. Each country, community, education authority, or school will have a particular set of major and minor challenges to overcome.

The last article, by Lourense Das from the Netherlands, reiterates the changes taking place in education in general, both in terms of pedagogy and integration of ICT into the curriculum. However, in this article we are introduced to the benefits and pitfalls of partnerships between various library groups as they have developed in the Netherlands in response to education

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reform and constraints in resourcing. The importance and value of a trained teacher librarian or school library media specialist as part of quality school library services is emphasized.

Conclusion

Extending the reach of the school library involves cooperation and development in a number of new directions. The articles included in this theme section cover important issues and highlight areas for discussion, exploration, action research, and critical review. They also challenge all school librarians never to be complacent, but to continue to be innovators and leaders in their school communities.

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