

# The Digital School Library

## *A World-wide Development and a Fascinating Challenge*

David Loertscher

**T**he Internet as an information environment for children and young adults has created a fascinating competitor to libraries of all types. Search engines such as Google are so easy and immediate that many young people, faced with a research assignment, just “google” their way through the Internet rather than struggle through the hoops of a more traditional library environment.

To be sure, the Internet is:

- Overwhelmingly large;
- Mostly irrelevant and largely unreliable for the age group;
- Full of advertising, pornography and other entities designed to lure young people into becoming paying customers or participate in other unwholesome activities;

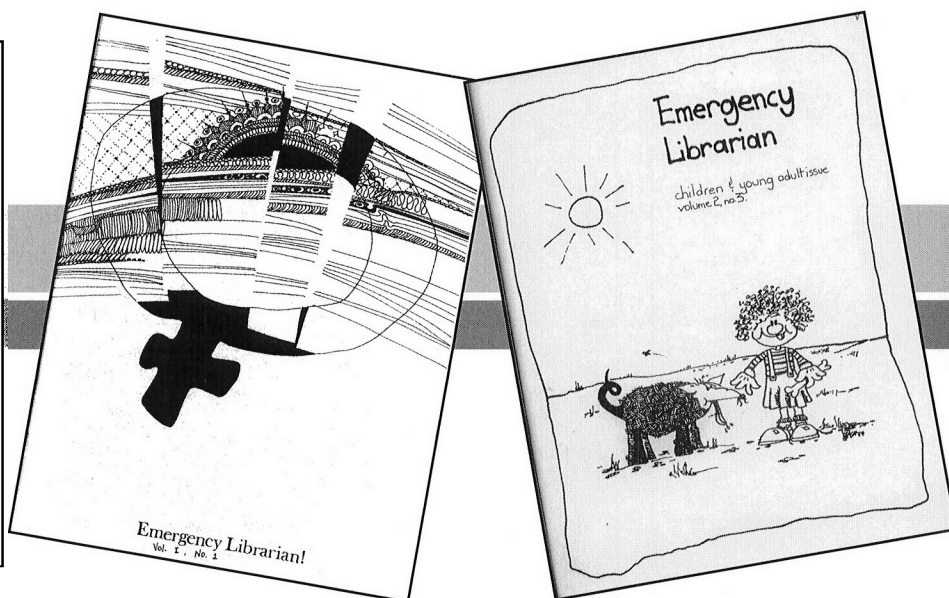
- Getting outdated as many sites age without funding or time for volunteers to update them;
- Becoming less and less “free” as corporate entities try to recover costs or make a profit; and
- In some danger of collapsing as its size overwhelms capacity.

Yet in spite of these drawbacks, youth are attracted in such large

percentages that library collections, even though superior in content, are ignored. Are we surprised that users gravitate to information systems and technology that suit their needs, whether or not those systems are superior? Teacher-librarians need to realize that to stay relevant, they must embrace the information needs of children and young people on their own terms, not those of well-meaning adults. Many school libraries are rarely accessible at the times when information needs are critical: they are down the hall, filled with classes already, closed in the evenings, and often their most valuable information resources, the reference collections, are chained to their shelves. Google, on the other hand, is always there as long as the

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connection is working. And in the age of wireless, it is ubiquitous as well as available 24 hours a day, seven days a week.

What sort of school library information system would young people be attracted to? What system would be so valuable and so convenient that students and their teachers would want to start there first before venturing forth into the information smog of the Internet?

## The library as the digital hub of the school

In the United States, many school administrators understand that when they give a speech about the library, they should refer to their library as "the hub of the school." In the age of digital information systems, that phrase can be truer than ever before. I would propose that every school library in the world that is able construct a portal/web page that constitutes the central hub of information essential to every student and teacher. This portal would be the home page of every student's and teacher's computing device as it is turned on. The school library would be every student's and teacher's essential information system. To these users, "It all begins at the school library," since it is the gateway to the world. It is *the*

place to start: *A safe and nurturing information environment*. In this article, we will explore the academic environment of a total information system for youth. We can imagine a career and personal space in addition, but space does not permit exploration of those worlds. (For more discussion of these concepts, see Loertscher, 2002).

## The academic environment

### A safe, nurturing environment

The first essential element of an information environment that would truly nurture every student and teacher is a closed system with a firewall of protection from the outside world, an *intranet* rather than an Internet. For hundreds of years, librarians have built collections of materials, information and technology selected for a particular group of users. It never contained everything, but it did contain the highest quality materials targeted at users in a specific community. It was as large as the librarian could influence the community to purchase.

Teacher-librarians have not sought to build libraries containing all that is known. Such collections would not be desirable in any elementary or secondary school. Even in the digital age, teacher-librarians

would build a smaller (a relative term) system, yet it would be "enough" to challenge every learner.

The digital information system would also be a safe environment from a number of elements that have become so common on the Internet: advertising, pornography, hackers and push elements from persons or groups trying to gain access to youth for a variety of nefarious reasons. Just as we protect our homes and school grounds from harmful elements in the community, the digital information system would also be protected from destructive forces. Such a protective environment has nothing to do with the issue of intellectual freedom or with filtering as it is known currently. And this protection extends not just within the library walls, but into the classrooms of the school and into the homes of students and teachers who are accessing this school library intranet.

The intranet envisioned here is no different than many created for professionals in corporate and research environments around the world. Many organizations have intranets protected from the outside world. In such systems, e-mail and instant messaging can take place, but only within the internal environment. Numerous parents understand



these intranets because they participate in them at their workplace. Our students might have additional e-mail and instant messaging as a part of independent accounts from home to satisfy their desire to be more independent from the provided intranet from the library resource center. Figure 1 shows this protected information environment or the walls of the digital school library.

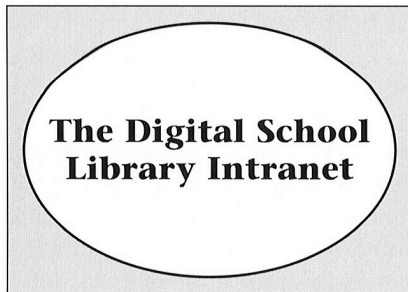


Fig. 1: The Digital School Library Intranet

**Customization for every user**

Teacher-librarians are accustomed to building "one-size-fits-all" information systems. They build catalogs using search mechanisms and search terminology that all users, adult or child, sophisticated or novice, must use to find materials successfully. A number of libraries targeted at children have subscribed to automation programs that provide simpler and more appealing interfaces. However,

even with these specialized catalogs, the interface is still one-size-fits-all at the child level.

A much more optimal interface would allow each user to create and build his own view of the information space within the school library intranet. A child at a certain grade level might wish to view information targeted at her grade level, assignments from only her teachers, e-textbooks for her classes, plus access to information suited to personal interests. This interface could expand or contract within the school library resource center intranet at the discretion of the user under the guidance of the teacher-librarian and the teacher.

Close to the beginning of the school year, students would enter the main school library intranet and, after some exploration of that environment, would design their own home page within that space, gaining access codes/authority at that time which then could be used on whatever electronic device they were using either at home or within the school. For example, students would identify teachers, courses, needed tools, areas of interest, topics for which they want to be notified regularly, languages spoken, cultural and religious preferences and level of ability; and they would set up

e-mail/instant messaging accounts inside the protected information space. At any time during the year, students, perhaps in consultation with teachers and teacher-librarians, could reset their parameters, or they might just choose to see the entire intranet.

The same features could be constructed by teachers who would want to be in contact only with their own students, their classes, their e-textbooks and resources for their classes. If they are collaborating with teachers outside their own discipline, other spaces could be opened up temporarily as needed. Following a common pattern already known in the larger library world, these personalized information spaces might be termed "my school library" as shown in Figure 2.

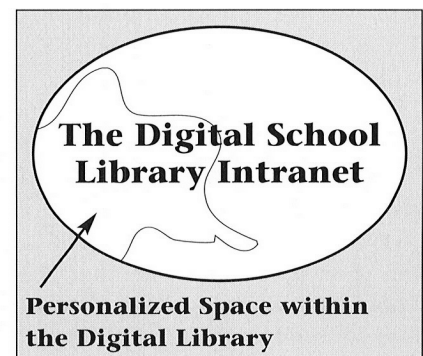
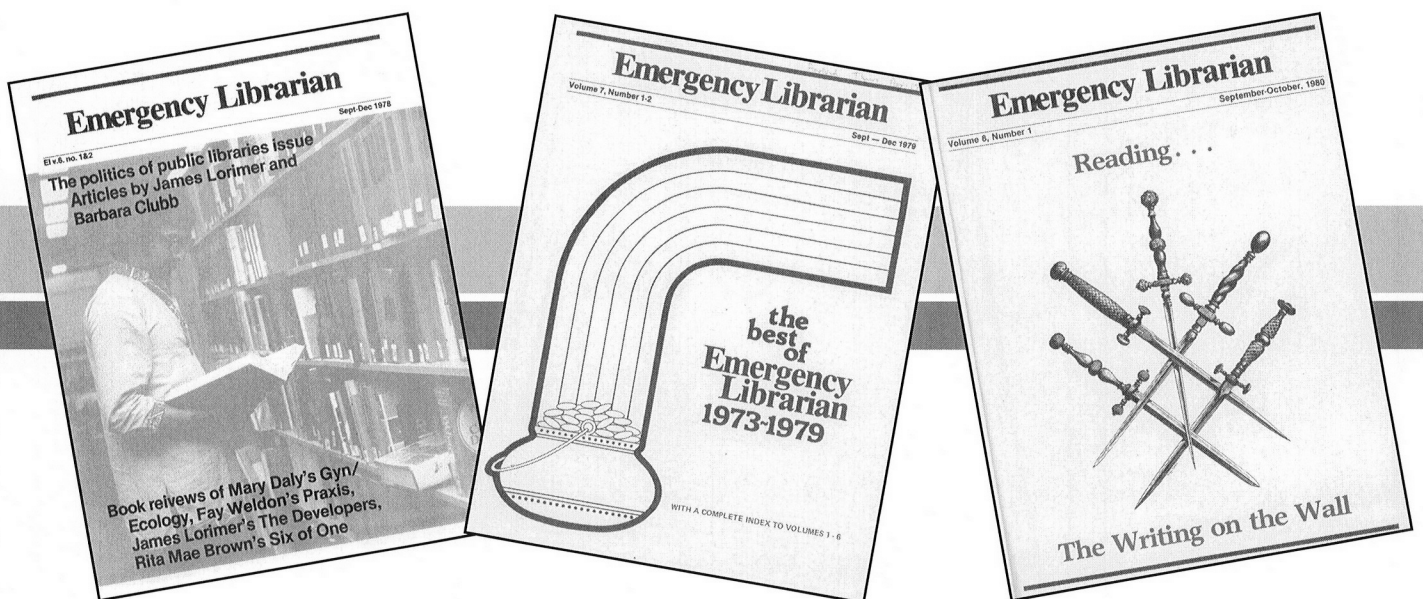


Fig. 2: Personalized Space Within the Digital Library



### The digital school library ribbon

Another way to think about the digital school library is to think of it as a ribbon down the computer screen of each user. In this system, each user—teacher-librarian, teacher or student—sees the library intranet as a ribbon on the left side of the computer screen and the balance of the screen is devoted to a personal work space. Those familiar with OS10 on Macintosh computers will recognize this concept as a type of library “dock” containing information resources, tools and communication devices – ever present, handy and customizable to my needs at any given moment.

### Building the digital contents of the academic information space

#### An information-rich environment

Building a digital information-rich environment for teachers and students draws upon long-known principles of selection: a solid match with the curriculum, appropriate difficulty level, authority and high quality, among others. Publishers and jobbers are still learning how to support the needs of young learners in the digital world and provide affordable resources.

Digital resources for school library

collections might contain three levels within the intranet. These are the core collection, the curriculum collection and the elastic collection.

#### The core collection

Similar to the reference collection of traditional libraries, the core collection contains materials meeting the longstanding Bradford distribution principle that 20 percent of the collection can usually account for 80 percent of the inquiries.

Thus, encyclopedias, dictionaries, atlases, core databases and captured web sites spanning common curricular topics would be selected. In North America, school districts and even states have licensed many of these core works not only for schools, but for every citizen within their state or province.

By doing so, these core works cost much less per capita, and when carefully selected, can provide a rich starter collection available equitably across whole populations. Individual teacher-librarians might create such a core collection, take advantage of core works created by larger entities for use by school students, or add to core collections as needed until the Bradford phenomenon appears to be operational. Figure 3 illustrates this concept.

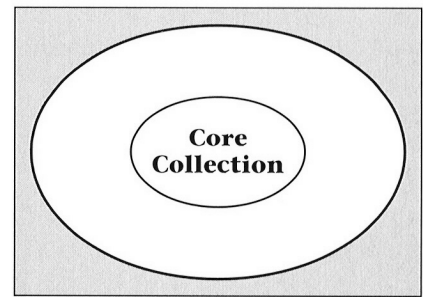


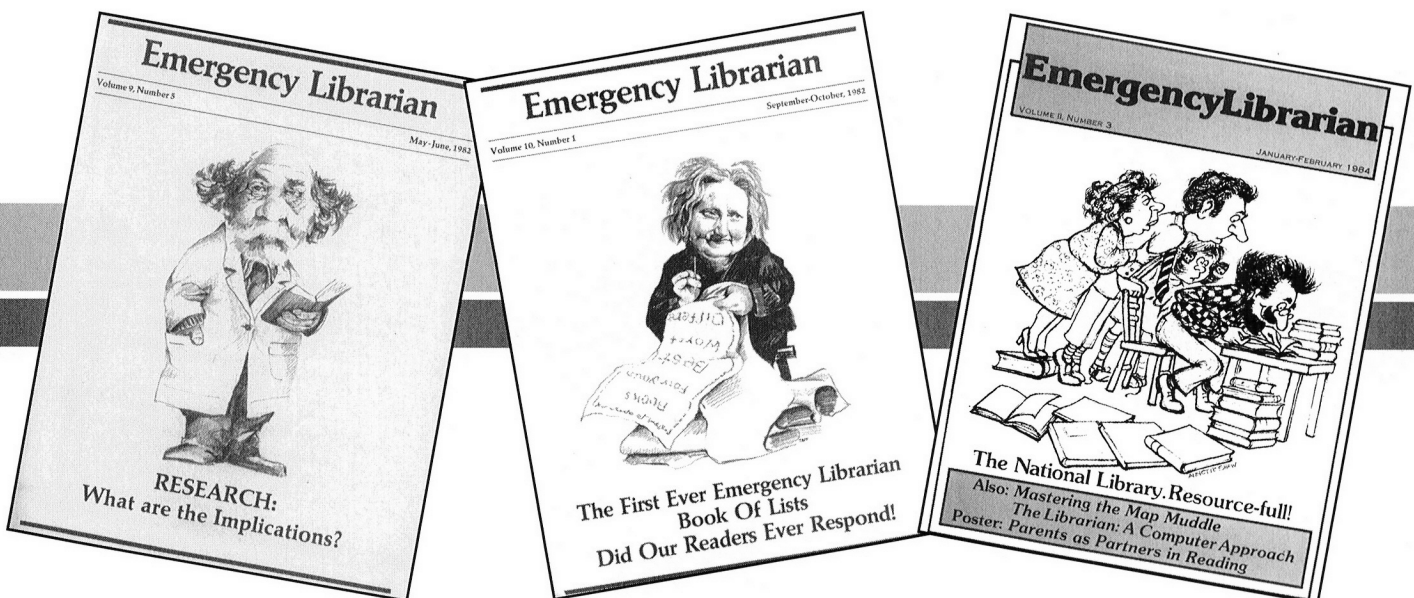
Fig. 3: The Core Collection

#### The curriculum collection

Using well-known collection development principles, a teacher-librarian would then add resources to the core collection designed to serve a particular curriculum.

These might include e-textbooks, collections to support reading initiatives, science and social studies materials, original sources, graphical sources and curricular information in a variety of languages and difficulty levels. From major projects, such as Access Pennsylvania done in the United States a number of years ago when school library catalogs were joined to form a single online catalog, we learned an important principle about teacher-librarians: the collections they choose to match their curriculums are as different as they are alike across schools.

Some may presume that a school district might build a digital collection that would serve the needs of





every elementary school. Not so. With professionals as "chief information officers" at the building level, digital collections would be as diverse and unique as required by the needs of a particular school's curriculum and student population, as shown in Figure 4.

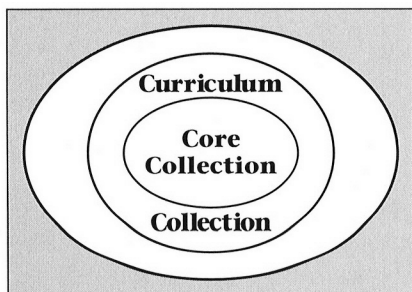


Fig. 4: The Curriculum Collection

### The elastic collection

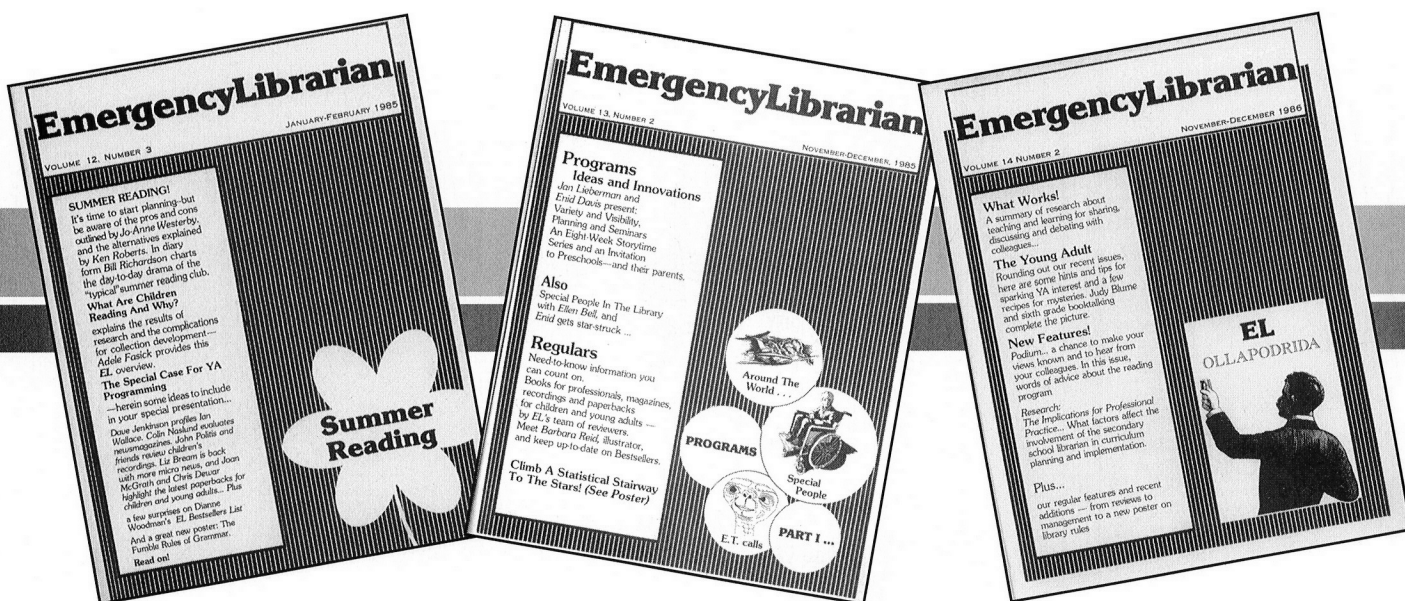
Information vendors often pitch their information databases to schools and libraries based on a subscription lasting for an entire school year. The idea of the elastic collection would be to open, on the basis of need but on a short-term basis, certain information channels to serve short-term information needs. For example, an advanced high school chemistry class might need access to *Chemical Abstracts* but could never afford to subscribe to such a sophisticated data repository for a year. The teacher-librarian

might contract with the company to open that database for three hours at an appropriate time when the students and teachers were doing high-level research. Access would then be ended. For some companies, the teacher-librarian might buy a "phone card" in advance that would allow access to a variety of specialized databases based on the minutes used or queries made.

Such access to specialized resources would be termed "elastic" since the school library collection would vary in size from day to day depending on the requirements of teachers and the needs of students at any given moment (see Figure 5.) This concept follows the well-known principle that in the digital age, there is a great deal of difference between what a library "owns" as opposed to what it "provides access to."

The elastic concept would work in the world of fiction as easily as in the advanced database arena. For example, as *Harry Potter* books are released, the teacher-librarian might lease 300 digital copies for two weeks, dropping to 10 copies thereafter. Or, one could imagine that as holidays are observed or popular topics become fads, the digital collection would swell or contract as

required by the users. Students and teachers might indeed control the size of the collection at any given moment as they clicked on the *Harry Potter* book collection. Instead of contracting for a certain number of copies, the users would govern the number of copies required as they clicked their way through the system. A teacher having all students read the same novel would "order" the number of e-copies needed for a short period of time. Thus, within certain parameters, the teacher-librarian, the teacher and the actual users would have control over the contents of the collection at a given moment. It would be interesting to describe the contents of the collection under this system since we would need to have computer reports that could describe these contents at a given time and in a given location. The important notion here would be that the teacher-librarian would be in the driver's seat, setting the parameters within which the users could work and shape the collection. And the chief information officer would often be constrained by the budget available.



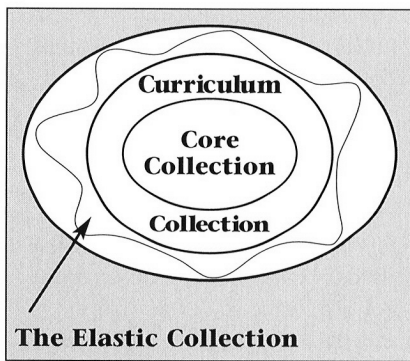


Fig. 5: The Elastic Collection

### The Internet and the intranet

No matter how large the school library intranet, students and teachers can benefit greatly from access to the Internet. In the past, the teacher-librarian or technologist turned on the Internet for everyone with various levels of filtered access. In our view, this responsibility should revert to parents or caregivers who could, for an individual student, allow various size ports to the Internet as pictured in Figure 6. This access might vary by levels from a tightly filtered Level 1 access to a full and open Level 3 access, with Level 2 providing some filtered access. If there were no parent or caregiver who would take responsibility, the student would be limited to the school library intranet with no

Internet access. Of course, one student might want to borrow from another student's access privilege and that would be a behavior issue to solve.

### The picture of the whole

Figure 6 illustrates the central components of the school library digital collection as a safe, smaller (a relative term) and high-quality information system. It emanates from the school library into every learning space in the school and into homes or other locations where learners are served. It would spread out to home-schoolers and those who could not physically come to school, and would reach out to include distant sites or "sister schools" as partnering occurs locally, nationally or internationally. Yet it is behind a firewall.

### Personalized features of the academic space

Within the intranet, every student and teacher should be provided with various other information technologies designed to maximize a learner's opportunities and potential. While others are likely to develop, the current state of technology allows a description of three important features: tools, push technology and pull technology.

**Tools.** Young people and their teachers will need the tools to operate within digital space that will boost their potential to learn and provide both sophistication and efficiency in support of the learning process. Current tools that come immediately to mind include:

- An office suite (word processor, database and spreadsheet,

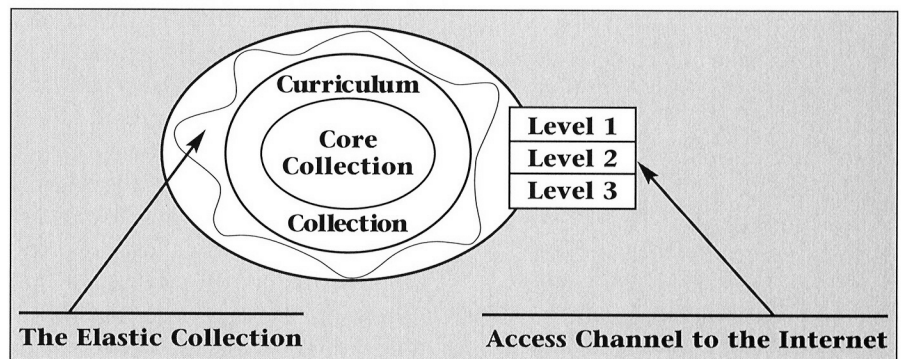
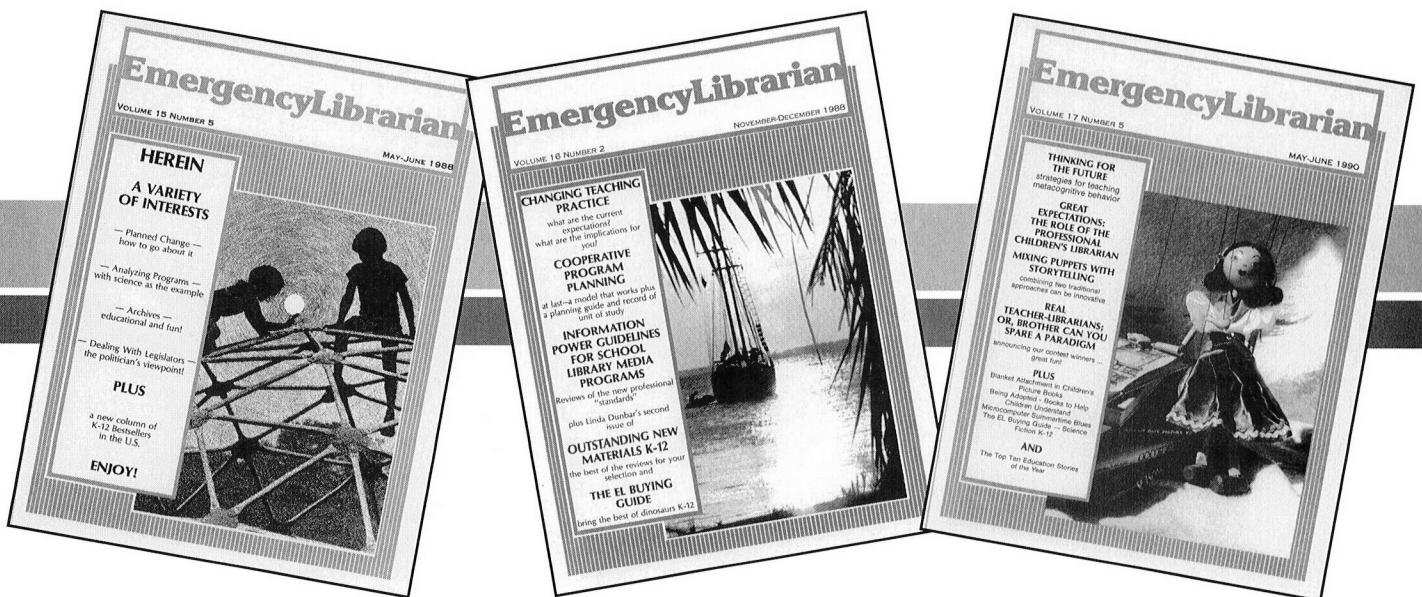


Fig. 6: The Digital School Library and the Internet



including mentoring software such as spelling checks, grammar checks, wizards or other guidance software to stimulate critical or creative thinking);

- Graphics packages (drawing, graphic art software, concept mapping programs, among others);
- Web construction editors;
- Presentation software (such as PowerPoint or Photoshop);
- Communication tools (allowing voice and visual contact with other learners or experts and allowing students and teachers to transmit projects, messages and graphics, or conduct planning);
- Translation packages (both language translation and cross-platform translation or conversion);
- Assistive technology (for blind, disabled or other physically challenged users);
- Communication tools (certainly within the educational environment and beyond as parents and protective technologies allow);
- Course/classroom software (programs such as "Web CT" or "Blackboard" where courses are conducted);
- Remote sensing devices (allowing collection of data, experimentation or experiencing whether onsite or from afar);
- Tutorials for using any of the sys-

tem tools or their upgrades; and

- Management tools for teachers such as grade books and attendance software.

Whether these tools will be resident on the school library server, on the client's device or a combination of both will depend on the sophistication of technology, bandwidth and a host of other technological issues known now or in the future. Many institutions already license software packages for entire work groups, an entire student body or small groups with specialized needs. Thus the pattern for this work environment is already in place and will become more and more flexible as schools exhibit the need to equip each individual with the tools required to flourish. These work tools will need to be upgraded on a regular basis as innovation and technology advance. Software operation will need to be seamless across the computing devices in the school, personal technologies and home-based or mobile technologies.

**Push technology.** Both learners and teachers can expect software on the intranet that will allow them to become aware of things that will benefit them. Current push technologies might include:

- Automatic notification software –

including calendaring; notification of assignments; alerting messages about new software, new articles on topics of personal interest or research; scholarships and learning opportunities; student activities and service projects; and a whole host of other messages to help the user grow and develop as a responsible member of the learning community. For teachers, this technology would provide notices of new professional articles or research reports of interest, alerts concerning policy changes or opportunities for professional development, to list just a few.

- Messages/news from administrators, teacher-librarians, teachers, parents. For both students and teachers, messages of upcoming events, announcements, reminders, opportunities are designed to help the individual plan and work successfully within the educational environment.

**Pull technology.** Pull technologies include the various search engines and meta-search engines to allow the user to locate desired information within the information system. Search engines have improved dramatically over the past two decades and there is reason to



believe they will become smarter and more adaptable to individual needs. Progress is being made toward a single rather than multiple search engines that will search a wide variety of information databases and sites rather than using multiple engines with a plethora of icons cluttering the computer desktop. A single meta-search engine might allow us to search first within the intranet and then, as the parent allows, outside that environment in the world of the Internet. At the present, the emphasis on building search engines is on *precision*, that is, to provide a selected few sources that meet a need exactly. Dr. David Barr, however, reminds us that learners who are becoming mini-experts in a topic or teachers who want to build comprehensive knowledge, require *recall* as well, where every relevant document is retrieved (Barr, 2002, p. 21-26).

### Advantages of the digital school library intranet

Numerous advantages drive the construction of a digital school library, at least one that is ubiquitous, reliable, and available 24/7/365 (24 hours a day, seven days a week and 365 days a year). The following may not be a complete list:

- The digital school library becomes

the **primary information system** – the true hub of the school.

Finally, on every digital device, computer screen or instructional space at school or at home, the school library has an essential role as “the place where I begin.”

- Digital libraries are available for students who are being **home-schooled** yet who need access to the same information-rich environment that government supporters have provided for those attending public schools.
- If a student for some reason moves to a distant location for a season, the digital school library is **available anywhere and at any time**. It might also provide **distance educational opportunities** for young people with special academic needs not available at the local school.
- By utilizing the personalized space that every user can create, the digital school library can provide many more **cultural and religious** materials that can be accessed or ignored under user control.
- The digital library provides for **individual differences** in ways print libraries could not do very well. Using the personalized space construction tools, the library can serve age ranges, ability levels, personal preferences, languages

and sophistication levels.

- **Equity** issues are served very well by the digital school library and are particularly effective with funding agencies trying to serve every child.
- **Access** to information in the digital world will not depend on access to a single physical location with the traditional organizational restrictions to when, where, and at what time information resources can be used. This concept is discussed further in the section of this article dealing with issues.
- Digital school libraries can be **device-enabled**, making information compatible with a wide range of devices whether they be computers, hand-held devices or other technical devices now being developed.
- The technology is now available to provide an information system for young people including **individualized** customization, using the “my space” concept that is already growing rapidly in many sectors of business and industry.
- Analysis of the digital possibilities allows us to think in terms of a **smaller but high-quality** information environment. Here, searches come up with both reasonable and/or rich results as queries are made.





- The digital school library intranet vs. Internet concept **transfers responsibility** of information access to the full Internet to parents/caregivers where it belongs.
- **Safe information environments** are created away from and protected from the rush-hour traffic on the Internet highway. *Predators of all types are locked out.* And the space provides privacy from snooping eyes of internal school workings and operations.
- Digital school libraries still embrace the principles of **intellectual freedom** since all materials within the library are carefully selected under the guidance of selection policies, as has been the case for a century. The tug-of-war of ideas is still alive and well.
- Teacher-librarians will continue to build a **selected collection** utilizing their time-honored expertise. They recognize the needed core materials, materials that will support specific curricular agendas, and they will know which resources belong in the elastic collection for specialized uses.

### Issues related to the digital school library

Numerous issues surround the creation of a digital school library. Some have already arisen. Others await

more experience, and the development of software and hardware.

**Access.** The major issue of the digital school library is really identical to the print school library: access. Who can gain access, when, for what periods of time, through what devices, at what speed and from what locations? Already, the next generation of cell phones is a combination of phone and PDA, and is Internet accessible. It is just a matter of time before a truly portable information device can be furnished to every user at an affordable cost.

**The concept of enough.** How much information and technology is “enough?” The answer to that question awaits research, but teacher-librarians who use “counters” to analyze behavior of users on their systems and then compare this behavior with learner success, will be able to start discussing this idea intelligently. Right now, we can only speculate.

**The redesign of workspace.** A number of research organizations and commercial entities are working on workspace design for young people. Because of the “cut and clip” tendency, both individual and group workspaces that track creation of a project through information space, sources used, notes from sources, progress through rubrics, complete with helps, tips, etc. would be

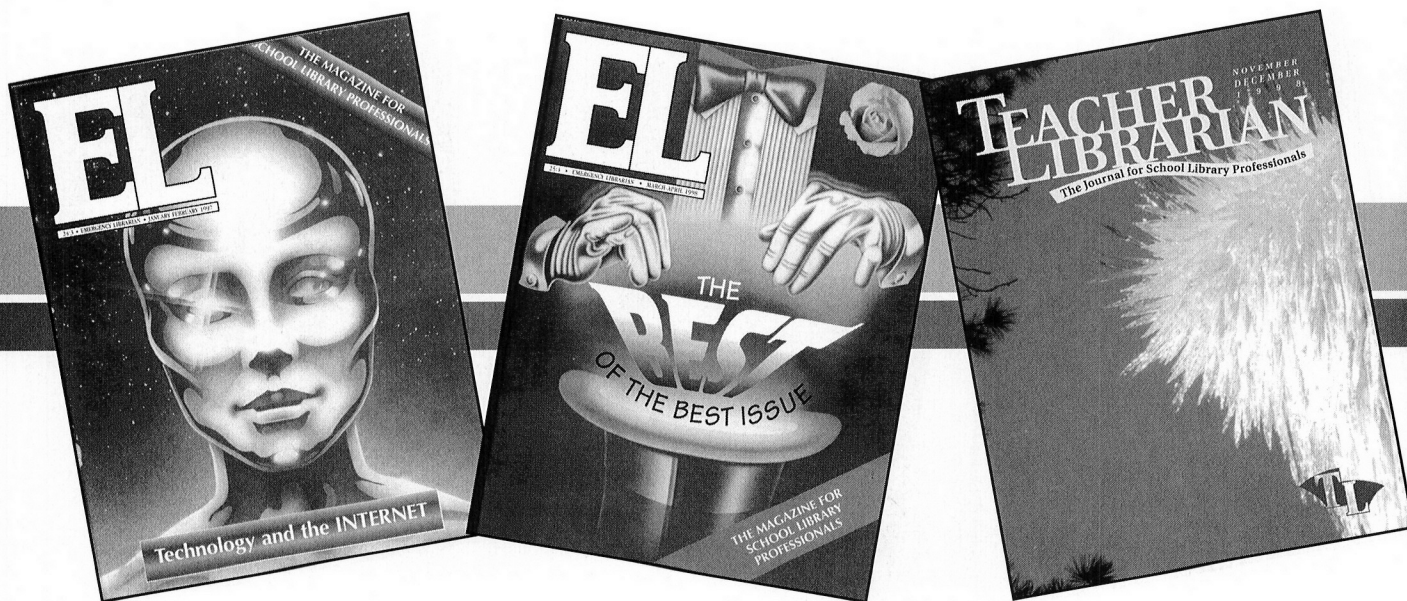
extremely useful.

**Breaking the googling habit.** Well-designed school library portals complete with counters would track student behavior on information systems. When the school library portal is the information avenue of choice for the majority of users, we might be able to declare victory.

**Working with the commercial world: Fair use vs. copyright.** There are a host of issues surrounding intellectual property as the school library collection becomes fluid rather than a collection of physical items. The current uproar in the music industry may result in partial solutions in the tug of war for compensation. Teacher-librarians will need to be fierce advocates of fair use as well as copyright as they purchase various information products for the digital library. No one model has emerged yet that satisfies both demands. It will.

**Will books survive?** The user will decide. They have already decided in favor of electronic periodicals over print. They will do the same with e-textbooks and other e-books. We need not make the decision for them.

**Budgets and the concept of the information utility.** Digital libraries cost more. Admit it. Defend it by showing the difference in learning in information-poor vs. information-





rich environments. We seem to be emerging into an information utility concept. There are costs associated with school buses, heat, lights, and now information. Don't pay the gasoline bill – cancel school. Don't pay the information utility bill – cancel school. Interestingly enough, my calculations show that the cost per child for e-texts and all digital library materials would actually be less per month than the cable or satellite television access bill in the home.

**Staffing.** Some of the components of the digital school library can be funded and shaped at district, regional, state and federal levels or their counterparts in various countries of the world. We have some temptation to build one system and serve it out to everyone. While theoretically this could be done, there are a number of important reasons why this will be insufficient. After an extensive review of the research literature on information literacy, Loertscher and Woolls concluded that in the world as we know it, the human interface is a vital component of the information system. (Loertscher & Woolls, 2002, p. 21)

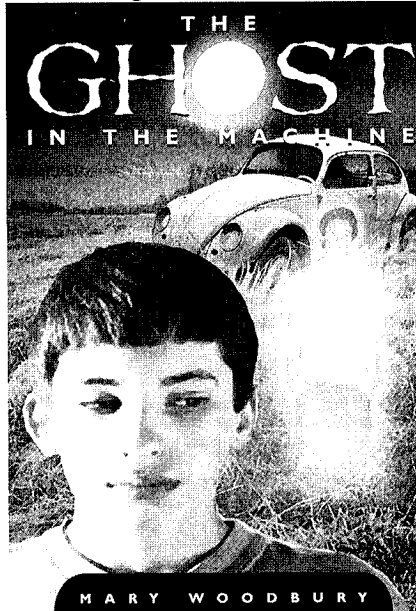
Unless computer systems and delivery mechanisms become extremely intelligent, just linking young people in and turning it on will be insufficient. If and when that

scenario happens, we will learn what is best. Meanwhile, this generation needs full-time professional, technical and paraprofessional assistance to transform the tools and technologies now known into learning.

## Conclusion

Not all the features of the digital school library that have been discussed are available at this writing, but every month, new developments seem to enlarge the possibilities. A

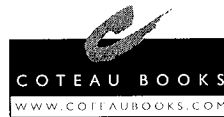
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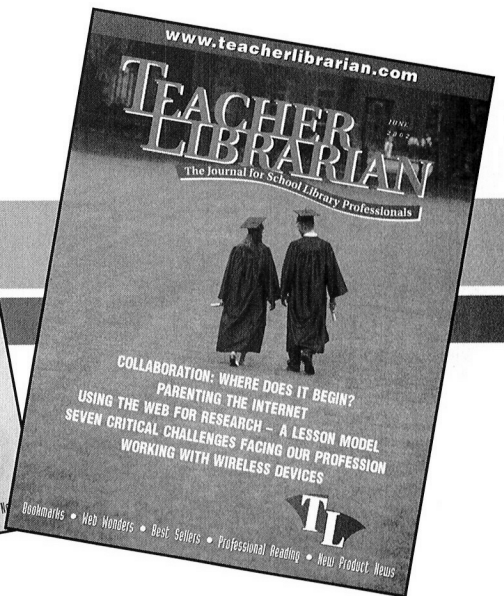
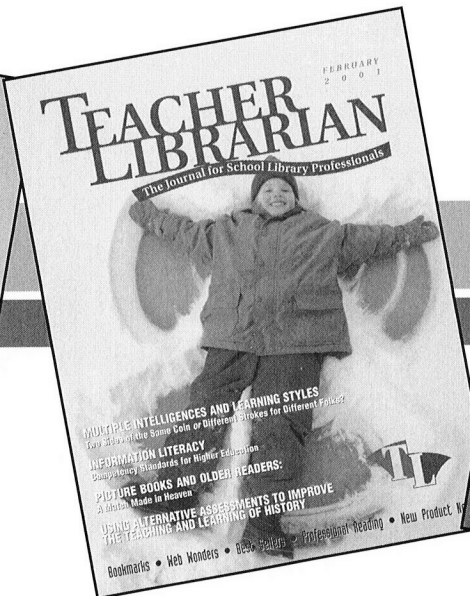
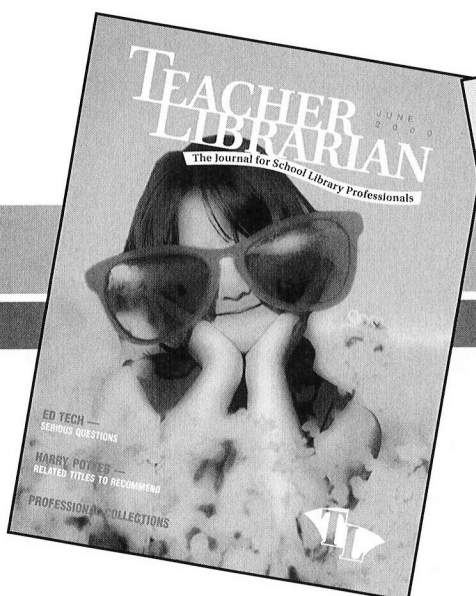
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quick survey of students in any local school asking how many prefer Google or some other search engine to the library databases will give a sense of how urgent the creation of

a viable digital library is. It's probably too late already for a segment of our user population. If such is the case in your school, bend over, and here is your KICK.

P.S. Has there ever been such an exciting time in this field? I think not!

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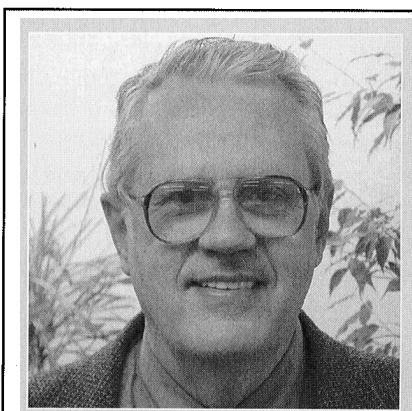
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David Loertscher is a professor at the School of Library and Information Science, San Jose State University in California. He can be contact at [davidL@wahoo.sjsu.edu](mailto:davidL@wahoo.sjsu.edu)

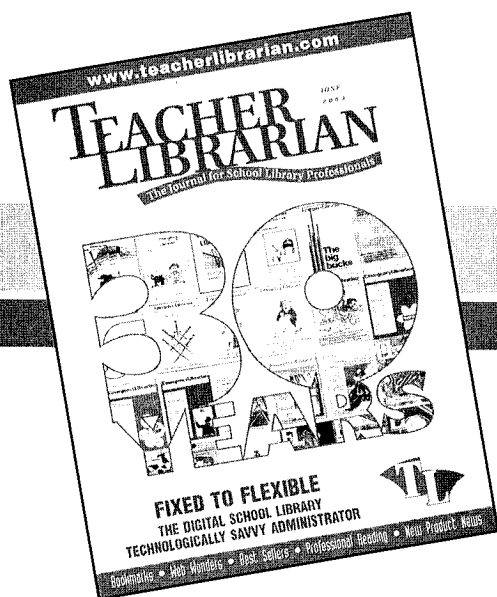
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