Blocking Access to Information and Ideas: The Use of Internet Filtering Software and Levels of Satisfaction in North American Schools

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A primary purpose of the school library program is to enable young people to access and make effective use of information and ideas. This role has been enhanced through access to electronic resources. The Internet, however, is not a pre-selected menu of information sources deemed appropriate for children and young adults. Therefore, some libraries employ software to block or filter unfettered access to information. The purpose of this study was to measure the penetration of this filtering software in North America, to ascertain which types of software are used, and to determine librarians' levels of satisfaction.

Introduction

The school library, through its teacher-librarian and collaborative program, enables students to access and make effective use of recorded information and ideas. Teacher-librarians take seriously their professional responsibility for selecting and making available a wide range of current, accurate, relevant, and appropriate resources.

The advent of the Internet and access to Internet resources in school libraries has led many teachers, administrators, parents, and teacher-librarians themselves to question the right of young people to unfettered access to information, particularly through the Internet. Inappropriate pornographic or obscene sites on the World Wide Web are most commonly cited as problems along with Internet Relay Chat rooms frequented by pedophiles. One alternative becoming more common is to employ the use of blocking or filtering software that purports to prevent users of equipped computer terminals from accessing such sites or protocols.

Purpose and Method

This research was funded through a contract with Cahners Inc., the publishers of *Library Journal* and *School Library Journal*. As the initial purposes of the study for the researchers and for the contractors were not identical they were subject to negotiation.

For the researchers, the initial broad purposes of the study were to investigate the following questions:

1. Who uses Internet filters in Canada and the United States of America, and are there differences in use dependent on geographic location, gender, qualifications, years of experience, or size of budget?
2. Who decided that the library would use Internet filtering software, and was the decision made at the school, district, or provincial/state level by educators or by politicians?

3. How widely are filters used in a district (i.e., in all schools in a system or in only some schools such as the elementary school)?
4. Is the filter located on or off site with a client or proxy servers, or an Internet Service Provider (ISP)?
5. Does the filter work use key words/phrases, access/denial lists, or Platform for Internet Content Selection (PICS)?
6. What alternatives to filtering were considered or are now employed, and is the emphasis of the overall program on preparing students to deal with sources of information beyond their interest or maturity or on protecting students from inappropriate sources of information?

For the contractor, the initial purposes of the study were to determine which Internet filter programs are used in schools and public libraries and the level of satisfaction with them.

As a result of several discussions, the purpose of this study was to:

- Measure the penetration of Internet filtering software in the school and public library markets.
- Ascertain which software brands are used and what they feature
- Determine librarians' levels of satisfaction with the software and the vendors.

Each of these research areas met the contractor's needs while enabling the collection of additional data of interest to the researchers. For example, while it was not possible to study demographic profiles in detail, as this would invade the publishers' relationship with subscribers, it was possible to answer technical questions about how the filters work and where they are located through the data collected about software features. Similarly, it was possible to assess where the decision was made and which alternatives were considered through open-ended questions related to satisfaction levels.

A literature review was conducted with graduate students Betty Barton Chapin and David Bruce to identify the issues related to filtering Internet-based information for young people, alternatives to filtering, the software currently available, and their strengths and limitations. This review was reported as follows:

Haycock, K., Barton, B. & Bruce, D. (1999). Information age dilemma: Filtering the Internet for young people. In D. Bogart (Ed.), *The Bowker annual library and book trade almanac.* (44th ed., pp. 235-265). New York: R. R. Bowker.

See also:

Bruce, D. (1999). Filtering the Internet for young people: Products and problems. *Teacher Librarian: The journal for school library professionals, 26* (5), 13-17.

Chapin, B. (1999). Filtering the Internet for young people: The comfortable pew is a thorny throne. *Teacher Librarian: The journal for school library professionals, 26*(5), 18-22.

Drs. Ann Curry and Ken Haycock developed the survey questionnaire with graduate student Myfanwy Postgate. The survey was reviewed three times by the contractor, revised for content, approved by both researchers and contractor, and mailed on April 24, 2000 to a random sample of 2,000 school librarians and 1.000 public librarians who subscribe to *School Library Journal.* The field closed May 26, 2000.

There was no notice for the survey sent in advance of the mailing, nor a follow-up reminder, but respondents were invited to select a charity of choice for a donation of US $1.

This preliminary report provides a summary of the school library component and makes comparisons to public library responses only when they are substantially different and of general interest. Drs. Curry and Haycock are preparing a report to the profession in *School Library Journal* and its 43,000 subscribers. Further interpretation and dissemination is anticipated.

Results

Profile of Population

Seven hundred and thirty-one surveys were returned for a response rate of 24%, comprising 465 school librarians (23%) and 266 (26%) public librarians. Thirty-one percent of the schools included elementary level grades (K-5), 51% included middle/junior high school grades (grades 6-9), and 44% included high school grades (grades 9-12); the percentages do not add up to 100% as many libraries serve schools with more than one level of schooling.

It should be noted here that the sample was not representative of the standards of support typical of school libraries in the United States and Canada. It was also not representative of the profile developed in *School Library Journal*'s own biennial surveys of levels of support in school libraries.

For this study the elementary schools had a mean population of 543, the middle/junior schools 702, and the high schools 945, with a mean for all schools of 775 students. The job titles used most frequently were media generalist (55%) and librarian (32%). The schools, stated in means, were staffed with (full-time) 1.6 library media specialists (or teacher-librarians, the term used in this paper), 1.1 clerical staff, 3.2 volunteers and 4.5 student assistants. The per capita expenditure last year for print and electronic resources was US $18.65 per year.

Policies

It has long been standard practice to encourage schools to develop policies on the selection of library materials so that the school community understands why and how materials are selected and the means by which they might be reconsidered. In this study 91% of the schools had such a policy, 96% had a policy on Internet access, and 96% had a policy on acceptable use of the Internet. The figures were somewhat higher for larger schools and high schools.

Of course, it is useful to have such policy statements only if students and community members are aware of them. Most schools (59%) inform students and parents through the student handbook, 56% require that students and parents sign Internet use waivers, 39% require that students sign up before use, and 37% provide informal instruction. Perhaps surprisingly, only 25% post the policy (higher in high schools), only 24% offer integrated instruction in Internet use, and only 21% provide formal training sessions.

These additional services are provided for Internet guidance:

- links to age-specific commercial databases (51% of the schools)
- links to pre-selected web sites (50% of the schools)
- links to age-specific search engines (37% of the schools; 50% of elementary schools and 20% of secondary schools)
- links to age-specific research tools (37% of the schools).

Slightly more than one-fifth (21%) of the schools provide none of these additional services.

Use of Filters

Currently, over twice as many school libraries (53%) as public libraries (21%) use Internet filtering software. An additional 11% of school libraries and 9% of public libraries have investigated using Internet filtering software and are considering installing it. Nearly seven out of ten public libraries (69%), however, do not plan to use Internet filtering software.

School libraries also embraced filtering software earlier than public libraries, with 46% having installed software prior to 1999 compared to only 33% of public libraries. The leading Internet filtering software system in the school library market is *Bess* (N2H2), with 36% of those using a filter using *Bess*. Next are *Surfwatch* (11%) and *Cyberpatrol* (10%). Many other systems are used by smaller percentages of schools. Interestingly, and disappointingly given the differences in maturity levels and interests, there is no difference in levels of filtering Internet access in elementary, junior high, or high schools.

Types of Filters

Systems work in quite different ways, however, and choice of blocking software should consider the methods of filtering best suited to one's situation.

Location of the Software. The Internet filtering software can be located on a client server (the individual computer) or on a proxy server (serving more than one computer terminal), and it can be on-site (in the library or school) or off-site (typically in the school district office). The library's Internet Service Provider could also manage the blocking or filtering.

School libraries are most likely (59%) to have their filtering software based on an off-site proxy server, while two in ten (21%) have their filtering handled through the Internet Service Provider. On-site proxy servers are used by 14% of those using filtering software. Interestingly, more than half of the public libraries in the sample (59%) have their filtering software installed on individual computers (client-based), while this is true of only 5% of the schools.

Methods of Blocking Access. Some systems block access based on words or phrases, while others have an approved access list (those web sites one might specifically access) or an approved denial list (those sites one specifically cannot access). Either the purchaser (the library, school, or school system) or the vendor might determine the method.

Almost half (47%) of the school libraries using Internet filtering software use vendor specified words or phrases for keyword blocking, while nearly three of ten (29%)

use specific words or phrases that they specify. There is some confusion here, however, as a surprisingly greater percentage of school librarians (35%) say they don't know what type of keyword blocking their library employs, compared to only 19% of public librarians.

Of the types of site blocking possible, the most frequently mentioned (43%) were vendor-specified denial lists with specific URLs or web sites blocked. Library-specified denial lists were mentioned by 24% of the teacher-librarians. Vendor-specified access lists were mentioned by 21% of the schools. Again, a significant percentage (44%) were unable to answer the question, perhaps explaining why the total of the reported methods exceed 100%.

Whether the filtering software employed a web rating system, such as the Platform for Internet Content Selection (PICS), could not be answered by seven out of ten (69%) of teacher-librarians.

What to Block. An important question for teacher-librarians is "who decides what is blocked?" Is it the library or the vendor? And if it is the library, does that mean the teacher-librarian, the school (whether the teachers, administrators, or parents), or the school district itself for all of the schools? All of these are possible in different situations.

Similarly, who controls changes to the filtering program? If, for example, the blocking software prevents access to a useful site on "breast cancer" or "Babe Ruth," can the teacher-librarian change the program to enable access? If so, is the change made quickly and with relative ease? Some programs offer the ability to change access immediately while other vendors and school systems can require several days wait.

The most frequently mentioned protocols blocked in schools by Internet software filtering are Internet Relay Chat (IRC) in 43% of the schools and e-mail in 31% of the schools. Disturbingly, in terms of advocates for student rights to freedom of expression and intellectual curiosity, 40% of the teacher-librarians in the study did not know what was blocked in their situation.

About half (54%) of the teacher-librarians surveyed did not know if the vendor would give them access to the list of blocked sites. Of those who asked the vendor for the list, only 61% were provided with it. *Bess* users were more likely to say that they can't have access to the list (73%). Nearly half of the teacher-librarians had made a request to change a blocked site; 85% said that the vendor honored the request (this was true also for *Bess*). Over half of the teacher-librarians had not asked the vendor a question about the software. Among those who had asked a question, the vendor was somewhat or very helpful (88%).

Decision to Install

It will be no surprise that school superintendents were the most influential group in deciding to install Internet filters: 73% of teacher-librarians rated Superintendents in the top three influential groups. Ranked second in terms of mentions are school board members (59%), followed by principals (36%). Also influential are school and school district Technical Committees (33%) and teacher-librarians themselves (28%). It seems likely that the influence of principals was lower than expected because the majority of school libraries use filters that are located on off-site proxy servers, most likely installed across the system as a result of a district-wide decision.

Levels of Satisfaction

Just over three-quarters (76%) of those who installed filtering software were satisfied with their decision; nearly one quarter were not. Elementary school librarians displayed a somewhat higher level of satisfaction than did high school librarians: 81% were satisfied versus 74% respectively. The majority, 87%, felt that the software met their expectations for filtering sites at least "somewhat". Teacher-librarians were also satisfied with the particular choice of software.

The extent of one's satisfaction or dissatisfaction with filtering software seems determined by one's view of each of the following five criteria, which resulted from examination of the qualitative responses to open-ended questions: (a) program alternatives, (b) student safety and control, (c) software flexibility and vendor response, (d) locus of decision-making, and (e) personal/professional satisfaction.

Program Alternatives. Clearly, teachers and administrators are capable, with parental involvement, of developing appropriate programs of effective and ethical Internet use.

> *I would prefer non-filtering software and extensive teaching of appropriate Internet behavior accompanied by intensive teacher involvement in selecting specific sites for student use.*

> *The job our school was doing in teaching the correct procedure of using the Internet was satisfactory.*

At the primary level there is no educational need for students to be searching the Internet. The classroom teacher or teacher-librarian can capture the sites appropriate for the topic of study and "bookmark" them for student use; indeed there are software programs available to assist with this process. The students can then use pre-selected and pre-screened sites for their inquiry.

> *Hasn't been a problem. Don't get blocked from too many sites. In our elementary school, we do more searching of pre-selected sites rather than free searching with key words.*

At the early intermediate levels, students could search together with their teachers or be taught basic search strategies such as Boolean logic. Some school districts taking a more broadly-based approach to resource management and information technology have found that students use their school library, commercial on-line databases, and CD–ROM sources, when they are available, for their information needs far more than the Internet because the information is more accurate, reliable, and complete. There is also an increasing range of both commercial and not-for-profit search engines available for these age levels that screen sites for age appropriateness. These can be added to a graphic user interface for school terminals for ages 8-12. This allows for positive selection of age-appropriate sites rather than random censorship of information for all ages.

At the intermediate/junior level and up schools might offer short "courses" in Internet ethics and appropriate use and perhaps provide a "driver's license" or simply add relevant additions to our schools' already comprehensive codes of conduct. A common example is:

> *I respect equipment, software and materials; I respect other student's work; When I quote or copy others, I give credit; I realize that all e-mail may be public information; When I find something inappropriate, I exit immediately; I don't give out my name or personal information over networks.*

These could of course be modified and can be supervised. Occasionally, the school may need to "suspend" a license to ensure compliance.

> *It is more responsible to teach cyberethics than use filters.*
>
> *I didn't support filtering. The Internet use guidelines and consequences for deliberate misuse should have been sufficient.*
>
> *Times change so quickly that filters are unable to keep up adequately. Adult supervision and strongly worded Student Responsibility Contracts should be enough.*
>
> *We do not want to block sites except for free e-mail programs. This was our main concern—students sending inappropriate e-mails. Otherwise, close supervision and our AUP and disciplinary action are our means of controlling Internet access.*

Further, instead of investing in blocking software schools might develop more appropriate navigational front ends to useful sites and guided interfaces for schools. Students should be taught to be effective navigators, capable of turning information into knowledge, acting as their own filters.

Essential in all of this is parent education. Parents need to be assured that their child's own teacher or at least the teaching staff at the local school have the competence and confidence to provide appropriate programs for young people, and this should be done through school-based parent advisory council meetings.

Students at the secondary school level can be taught more advanced searching and acknowledge that their use may be monitored through checking History of use. They too sign appropriate use agreements. Indeed, a high percentage of schools, as indicated earlier, have appropriate use policies and signed waivers.

Almost all schools (99%) monitor the sites that young people view in some way. For schools not using filtering software this is typically (86%) done through staff monitoring use and "tapping the users' shoulder" if he or she accesses an inappropriate site. About one-third (34%) monitor access visually in some other way as well but there is no consistency in approach. Most common, at 43%, is checking the user's history and sign in sheets.

Through these approaches schools endeavor to teach students appropriate use rather than suggest that a computer program might do this. Philosophically, an emphasis on teaching programs seeks to prepare students for the adult world, while an emphasis on filtering software seeks to prevent their access to that world too early. Both approaches have the concern of the student uppermost:

> *The students' favorite expression has become "Bess won't let me in."*
>
> *I would prefer placing responsibility of appropriate use with the user.*
>
> *The "best" filtering is teachers monitoring.*
>
> *Filtering tries to enforce morality externally. We should be teaching internalized morality.*

Those who were highly satisfied with Internet filtering and the software program in place mentioned the teaching program as an alternative or supplementary approach less

than those who were highly dissatisfied. Those who were highly dissatisfied were concerned with the message being given to students about a computer program filtering their information, were concerned about the library's role in access to information and ideas being impaired, and believed that the teaching program in place at the time of installation of the filtering software was generally serving well the school and community.

Student Safety and Control. The over-riding concern of teacher-librarians using filtering software, who are satisfied with the decision to install, is student safety:

> *Our number one concern is for the safety of our students.*
>
> *Just a safety net for elementary grade students...*
>
> *All inappropriate and other selected sites blocked well. Librarians and teachers do not need to worry about whereabouts of students on Internet.*

Some believe that the installation of filtering software, and its inherent inability to block all of the inappropriate sites, offers parents a false sense of security:

> *Besides the freedom of access issues, it only provides false security to parents and novice teachers. It undermines trust we should have in students.*
>
> *The Internet filtering lets parents and others "think" that the inappropriate sites are blocked; they are not all; in reality, it's impossible; it's mostly symbolic!*
>
> *It's a political gimmick and a way for clever entrepreneurs to make money by creating fear.*
>
> *Sites/names change often, making it tough to keep track.*
>
> *Reassures parents that students won't have access to inappropriate sites. However, the filter is not always adequate or it blocks good sites.*
>
> *It has stopped 90% of pornography and 75% of game playing. Also, a chat filter stopped 70% of chatting.*
>
> *It caused a tremendous public reaction that far exceeded the reality of problems with Internet access.*

Some teacher-librarians are confident that it would be difficult to disarm the software, with 26% believing that it would take a hacker or couldn't be done (21%). However, 41% don't know if the software can be disabled. Those who believe that the filtering software can be dismantled by students seem to have experience in this area:

> *Too many kids can hack through.*
>
> *Students are able to manipulate.*
>
> *Students bypass all blocking.*

Working in a school does offer its own set of constraints for teacher-librarians according to some:

> *A school library must filter the Internet to block pornography.*

Being a school library, we have a duty to provide appropriate materials.

A public school takes the part of a parent. Full intellectual access is not our role.

One does wonder whether the staff too need this level of protection, as 20% of school libraries that employ blocking software for students also filter staff access:

Some sites I want to use are blocked.

I would like to see different levels of blocking one for students and one for staff.

Software Flexibility and Vendor Response. Teacher-librarians recognize the obvious: an adult eighteen-year-old high school student does not have the intellectual, emotional, and social developmental level of a six-year-old; surely they should be treated differently. A school district filter, however, applied across the system, will provide the same level of access to information and ideas for the eighteen-year-old as for the six-year-old unless options are possible within the computer system and the school system.

The filter is the same for K through 12. Ridiculous. That is the problem with filtering images.

Consequently, the level of satisfaction with the software and vendor was very much dependent on whether the program tended to block too much or too little, whether the filtering was done on-site or off-site, and whether the teacher-librarian had any control and ability to override the system.

Consider this level of satisfaction:

Our Technology Administration is able to make changes quickly to what is available. I am glad that I don't have to spend all my time looking over students' shoulders.

The filter helps me in guiding students to avoid inappropriate material, much like I do in selecting educational materials for our library. Having the ability to override blocked sites enables us to get sites necessary for their research.

It is very easy for library staff to turn off filter when classes are researching STDs or other health topics, drugs, and so on. In fact, we have it turned off more than 50% of the time. If there is unacceptable behavior, we just turn it on for a while, without making a big deal about it. It takes 20 seconds to turn it off if a student researcher is denied access to a useful site.

Conversely, one can imagine this level of frustration:

I don't have disable-authority. It literally takes days.

Subject headings are filtered even for online catalog.

Sometimes it will pull up a list of titillating sites (to middle school students), but the actual site is blocked. Other times it blocks completely innocuous sites.

It's a pain when it blocks a useful site simply because it reads what it believes to be a bad word.

Gives some help in monitoring, but keeps out many sites students need to use. Unblocking system is slow and cumbersome.

It does help with "in loco parentis" problem in school libraries. BUT it is inflexible and arbitrary. WE need ability to modify at the local level.

We are shut out of sites that would be beneficial and necessitate unnecessary time and effort to seek access permission. By that time the need for material retrieval has passed.

When students cannot get college information because they are asked for "sex," or can't go to sites needed to complete work, something is wrong.

There are also concerns about the degree of helpfulness of the vendor's staff, whether the program slows access, and whether it works consistently.

Locus of Decision-Making. Whether one supports filters and their use is dependent as well on where the decision was made, and by whom, where the filtering software is installed, and the degree of involvement one had in the decision-making process. Although the level of frustration is higher, the further from the school and library that decisions are made, there is also considerable dissatisfaction at the school level where the teacher-librarian does not have any sense of control over access to information that students require.

At the school level, teacher-librarians are both satisfied and dissatisfied depending on these factors, as illustrated by these comments:

Software was selected, installed, and maintained by network guy. I cannot modify it. Some sites are not blocked.

I cannot override the system to allow sites such as sexually transmitted disease.

Lock overrides are needed.

Decision made by administration. Librarians were informed AFTER the fact.

Does not allow for me to get to blocked sites.

Having some computers filtered and some unfiltered has been very successful.

Similarly, at the district level:

In this elementary school setting, the parents requested and it became a Board of Education policy.

The school district technology coordinator installed filtering software. I do not have access to an unfiltered computer.

This is a school district policy ad I have no control over any of it.

The parameters are set in the School Board Office where the server is located. People in schools can't make any changes.

With central office control, we find that sites we need are blocked. But we, locally, cannot change the status. By the time the central office changes it, we don't need it anymore.

Not able to access filtering system at this site. It always requires time and paperwork.

The library media specialists are not given access to overriding passwords when "good" sites are blocked.

A district technology committee makes the decisions with no suggestions from us "in the trenches."

I wish it had been a building decision instead of the technology department deciding for everyone.

I'm opposed to Internet filtering. Its only purpose in our district is to cover the district's derriere if someone goes somewhere they are not supposed to.

Filtering is a necessary pain to put up with in a school, even high school. Our community and superintendent are very conservative.

In some jurisdictions it is at the state level that filtering decisions are made regarding specific content:

Action taken at state level and we had no input. Sites often blocked for no apparent reason. When we e-mail and ask for review, we usually get a prompt response. They either unblock or explain why it's blocked.

We had no voice in the decision. The district has no control over the filter to modify it. Too many useful sites are blocked: Holocaust sites, breast cancer, teen suicide, AIDS, and so on.

It is done at the state level. Local control for entire district is left to the superintendent.

Personal/Professional Satisfaction. For some, the issue of filtering comes down to whether it makes the job easier and eliminates hassles, while others see it as an issue of professionalism, of appropriate roles and responsibilities. One could, of course, argue conversely that saving time does open up possibilities for more professional work.

Saves a lot of hassle.

Less time spent closely monitoring students.

It makes my job easier because I really do not have to worry about inappropriate sites.

It's no guarantee, but it does make my life simpler.

For professional teachers and librarians there are role issues:

It leads to complacency on the part of the staff. I agree that there are sites that should not be accessed.

We should not give our supervision over to a filter.

School personnel should be allowed status of professionals. Students should be supervised.

They are useful in situations like labs where close supervision is difficult. But I am opposed to keyword blocking because of research conflicts.

In the case of filtering software one's values can come up against local realities:

I believe in free access to all users.

Of course, at times one values comes up against one's job.

Perhaps for some, the bottom line is:

Intellectually I object to it; conversely, I like my job.

Conclusion

The purposes of this study were to measure the penetration of Internet filtering software in the school and public library markets, ascertain which software brands are used and what they feature, and determine librarians' levels of satisfaction with the software and the vendors.

Drawing on the returns of 465 school librarians in North America in May, 2000, it was determined that Internet filters are used in more than half of the schools. School superintendents and boards of education typically made the decision. There was no difference in use among elementary, junior, and high schools. Most schools had Internet access and appropriate use policies and made these known to students and parents in a variety of ways. Many provided additional services to guide students in their use of the Internet.

Filters varied in type and approach. Most schools had their filtering software located off-site on a proxy server, i.e., serving more than one terminal. It would appear that the use of specific words or phrases and access/denial lists are typically determined by the vendor. Many teacher-librarians were unclear about this, however.

Level of satisfaction or dissatisfaction with filtering software was dependent on one's view of the importance of these factors: program alternatives; student safety and control, software flexibility and vendor response, locus of decision-making, and personal/professional satisfaction.

Teacher-librarians are concerned about student safety and appropriate use of Internet resources. Some believed that safety was enhanced by filtering software while others preferred a planned, integrated teaching program rather than filters to teach appropriate use of Internet resources. Such a teaching program does not prevent inappropriate use so much as it informs students how to handle that use. On the other hand, use of filtering software applies the same standard of control to eighteen-year-olds as to six-year-olds across a school system and offers parents a false sense of security: there are innumerable examples of pornographic or obscene sites being accessed through filtered computer terminals. Conversely, there are also innumerable examples of appropriate information being blocked due to a word, phrase, or syllable that may be interpreted in more than one way. Further, some teacher-librarians believed that students routinely disabled the software.

There is no perfect solution or perfect software for providing access to Internet sites for young people. Although generally satisfied with blocking software, there was a high level of dissatisfaction with the filters' (in)ability to let good sites through (e.g., breast cancer information). There were similarly high levels of dissatisfaction in the software's capability for allowing the school's librarian to modify the "block" list. Dissatisfaction increased when the decisions to block access or make modifications were made outside the school by other educators, administrators, vendors, or politicians; and these decisions were difficult to change.

Professional values and appropriate professional roles and responsibilities each were considered by teacher-librarians in assessing their level of satisfaction or dissatisfaction with blocking access by students to information and ideas on the Internet.

Part V. Contributors

Contributors to the Fourth International Forum on Research in School Librarianship

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