Jamie Beth Hunsinger. School Library Media Center Web Sites in North Carolina. A Master's Paper for the M.S. in L.S degree. July, 2005. 29 pages. Advisor: Evelyn Daniel

This study synthesizes and applies current criteria for quality school library media center (SLMC) websites to a random sample of web sites from public schools in the state of North Carolina and then compares the results to findings of earlier studies by Poe, Jurkowski, and Baumbach. Twenty web sites were accessed on 1 June 2005 and compared. Although the expectation was that the SLMC web sites would show considerable advances since a similar study conducted by Kimberly Poe in 1999, such was not the case. In comparison with more recent and larger studies by Jurkowski and Baumbach, the sampled web sites do not show any significant advances, with the possible exception of the North Carolina web sites placing more emphasis on either of the important service areas: information literacy and reading encouragement.

Half of the study sites emphasized features of either information literacy skills or reading encouragement, but not both. Two high schools, one middle school, and one elementary school included only information literacy skills features. The six schools featuring only reading encouragement elements were all elementary schools. This result may be an artifact of the small sample size or it may reflect programmatic preferences. A future study examining this is recommended.

Headings:

School Libraries

World Wide Web—School Libraries

Internet—School Libraries

SCHOOL LIBRARY MEDIA CENTER WEB SITES IN NORTH CAROLINA

by
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A Master's paper submitted to the faculty
of the School of Information and Library Science
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Science in
Library Science.

Chapel Hill, North Carolina

July 2005

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Introduction

      The internet has increasingly permeated the lives of families across the United States. Parents communicate with teachers through email and message boards. Class web sites feature student work. The school library media center (SLMC), as the heart of the school, should, I believe, have a web presence that reflects its goals of supporting curriculum instruction, reading encouragement, and information literacy instruction.

      The SLMC web site serves as a portal for students to the resources in and beyond the media center. "A high-quality school library media center Web presence [can] enhance and extend [the school library media] program" (Baumbach, 2005, p.8). Through such a site, students can easily access internet resources, databases, encyclopedias, and catalogs for local public and university libraries. The SLMC web site is also an advocacy tool to reach parents, teachers, and administrators. "You already know that the resources offered in your LMC are essential to the school community. The LMC web page offers you a tool to ensure that teachers and students know that too" (Baumbach, Brewer, & Renfroe, 2004, p.51).

      It can be a daunting task for a school library media specialist (SLMS) to create a web site. Between teaching classes and administering the library, the SLMS has little time left to develop web site content and design an attractive user-friendly site. This time is well spent when the SLMS can refer to a list of most important content and design elements. Fortunately, many experts have contributed their thoughts and research about

what makes a quality SLMC web site. Following these guidelines, the SLMS will find

creating and maintaining a SLMC web site is worth the effort.

Literature Review

To determine what the current state of school library media web sites is in my home state of North Carolina, I looked first to current research. I reviewed the recent literature of education and library science to determine whether others have analyzed SLMC web sites and to assemble a list of the criteria for evaluating school library media web sites.

In a 1999 literature review, Kimberly Poe found only two brief articles with recommendations for SLMC web home page design. Since that time, the literature base has expanded, and more experts have weighed in about the contents and design of the SLMC web site. I found articles specifically dedicated to criteria for SLMC web sites, articles concerning particular tools to be included, and articles about the instruction of students through web sites. I will discuss several articles which compile SLMC web site criteria and three study reports.

From Poe's analysis of 16 US and four international SLMC web pages, broad categories of criteria emerged: Factual Information about the SLMC, Links, Additional Content Elements, Design Elements, and Special Design Elements (1999, p. 10-18).

Laurel Anne Clyde, a recurring name in the literature of SLMC web sites, is webmaster for the International Association of School Librarianship (IASL) which has presented monthly and annual awards for SLMC web pages since 2000; awards for 2003 are the most recently published.

The selection criteria for the Concord School Library Web Page Award (the primary IASL award) include:

- evidence of school library and/or school librarian involvement in page/site development;

- relevance of the page/site to the goals and objectives of the school library;

- visual appeal, including layout, choice of images, type face and style;

- organization of information on the page/site;

- quality of the writing and use of language (and proof-reading);

- ease of use of the page/site, and navigational features;

- educational, information, entertainment, or public relations value of the page/site;

- appropriateness for the needs of users;

- currency, evidence of update policy, and the provision of current information and/or links;

- technical quality (note that this is interpreted as the appropriate use of technology, not necessarily leading-edge technology);

- value of the page/site as a model for other school libraries and/or school librarians (School Libraries Online 2003).

A study conducted by Donna J. Baumbach in spring 2004 provides a comprehensive list of criteria gleaned from analysis of 100 SLMC web sites from the southeastern United States. Essential elements for any school library media web site, according to Baumbach, are:

- basic information (school name, contact information),

- mission statement,

- resources that support the mission (reading, information literacy, information access, technology, collaboration),

- information about other library resources and activities,

- new information (called "fresh food for the eyes and mind" -- features that will keep the audience coming back),

- content to meet the information needs of the entire school community (2005).

She also includes some caveats about poor web site design.

Baumbach, Brewer, and Renfroe (2004), though stating there is no set formula for

an effective school library media center web site, propose the following categories of

SLMC web site content.

- online catalogs not only for the local school LMC but also for other libraries students might use

- reference resources and assistance

- curriculum connections

- literacy connections

- general information about the SLMC (p. 46).

The article continues to discuss an additional essential feature: dynamic material.

The element of dynamic content is important to ensure that users return to the site

regularly. As Baumbach advises, "Build in features that will keep your audience coming

back" (2005, p. 11). These elements might take the form of links to news sources or

"word/quote of the day" or "today in history" sites. The site could highlight new

materials in the SLMC. A dynamic feature to generate excitement and buzz about

reading is a Top Ten list of most circulated books for the month or quarter (Baumbach,

Brewer, & Renfroe, 2004, p. 51).

Odin Jurkowski analyzed 34 Missouri SLMC web sites in 2003 to develop his list

of criteria. He reassures the SLMS that it is not necessary to "reinvent the wheel" to

create a successful SLMC web site. There are many resources available, including the

sites of other SLMCs (2004, p. 56). His list of basic and reference features closely

resemble those cited above.

According to Walter Minkel:

It is easy to say what makes a school library web site great. The site needs to anticipate what its community--students, teachers, and parents--wants. It needs to make it clear that the library it represents is unique, with its own personality and strengths. And the information tools it offers--catalog, subscription databases, and lists of selected web sites--must be easy to find, use, and understand (2003, p. 36).

While the ideal set of criteria for the school library media web site is well

established, it seems only a select few are reaching the goal. Perhaps because the average

SLMS is not finding the time or feels overwhelmed by the task. The three studies cited

here found school media web sites to be lacking in many respects.

SLMC web sites can serve a variety of purposes, the main purpose of the web site

should inform the content and design of the site. Kay Vandergrift suggests possible

purposes for the SLMC web site: "to offer resources that supplement curricular

materials…to develop pathways for students…to demonstrate how to search" (1996, p.

27). The purpose of the site may be expressed in an important feature mentioned in most

of the articles -- the SLMC mission statement. Unfortunately, many sites do not take

advantage of this opportunity. Only 18% of the sites in Jurkowski's study (2004, p. 58)

and 34% in Baumbach's more recent study included a mission statement (2005, p. 9).

The SLMS should also consider the lessons on web evaluation that she teaches

her students for two reasons. First, the SLMC web site is an instructional opportunity to

provide resources that meet the evaluation criteria for quality reference material (Symons,

1997). Second, the SLMC web site should meet these criteria itself. Jurkowski

emphasizes that the basic features of any web site should be present in the SLMC web site because librarians are teaching students to look for these features when they evaluate the sites they find for research. His 2003 Missouri study found these features employed inconsistently. These elements include webmaster (44%), contact information [email (68%), address (32%), phone (26%)], employees (68%), and date of last update (53%) (p. 57). Of the 100 US sites studied by Baumbach, 56% provided contact information, 67% listed employees, and 40% recorded date of last update (2005, p. 9). This basic information was among the most common SLMC web site features identified in the Poe study: names of SLMCs (85%), email (90%) (1999, p. 11).

Another category of essential SLMC web site content is reading encouragement. Sixty-two percent of the sites in Baumbach's study included some type of reading feature and 18% displayed book reviews (2005, p. 9). A greater number of sites linked to book reviews (40%) in the Poe study (1999, p.14). Jurkowski noted links to author sites, book clubs, book fairs, book request forms, and Accelerated Reader quiz lists. He found only three percent of studied sites featured new acquisitions (2003, p. 58).

The SLMC web site can support information literacy instruction through links and guidelines. In Jurkowski's 2003 Missouri study, these elements included search engines (71%), reference links (65%), and research links (32%) (p. 59). Baumbach's study found links to search engines (68%), online databases (67%), and information skills (49%) (2005, p. 9). Seventy-five percent of the Poe study sites linked to internet resources, and another 75% to search engines (1999, p. 13).

All of the above content elements must be presented in an accessible format to be helpful for users. Navigational links, if "consistently placed will allow patrons to

navigate with ease" (Poe, 1999, p. 14). Eighty-five percent of Poe's sites linked to school home pages, and headers were found on 100% of the sites (1999, p. 16). Baumbach warns against distracting design elements, including long Flash animations, sound that the user cannot control, and animated GIFs (2005, p. 11).

There are areas of common agreement in the literature on the content and design criteria for SLMC web sites. Sites should present basic factual and contact information for the SLMC to include names of the school and SLMS, phone number, email, hours, policies and procedures. The goals of the SLMC should be presented explicitly in a mission statement, and these goals should be supported by the site content. These areas of mission support generally include reading encouragement, information literacy skills, and curriculum support. All of this content should be presented in an accessible, user-friendly format. The SLMC web site should be reciprocally linked with the school home page and each supporting page should be linked home. Background and text design choices should not distract the user from the content and all links should be active. Dynamic elements, such as news or "word of the day" links, should be included to keep users coming back to the site regularly.

This study will synthesize and apply the current criteria for quality SLMC web sites to a random sample from the state of North Carolina and then compare the results to findings of earlier studies by Poe, Jurkowski, and Baumbach.

Methodology

For this study, I chose to evaluate SLMC web sites from the state of North

Carolina. I have been a resident of North Carolina for 10 years and will be a licensed

SLMS in the state. North Carolina has a long history of requiring licensed SLMSs in all

public schools and a strong central Department of Public Instruction supporting library

media programs in the public schools. There seems to be reason to expect that the picture

of SLMC web sites in North Carolina might be better than the average across the United

States.

I randomly selected 20 schools in North Carolina from the Education Directory

compiled by the State Board of Education, Department of Public Instruction

(http://www.ncpublicschools.org/nceddirectory/). Many of the schools originally

selected did not have school library media web sites that were accessible from the school

web site. (In a previous study of Florida SLMCs, Donna Baumbach found that "while

school library media specialists in almost 80 percent of all Florida public schools

reported having a school Web site, only about 42 percent linked it to the school library

media center's Web page or resources" (2005, p. 8-9).)

It was necessary to select 44 schools to locate 20 with SLMC web sites. Of 44 schools,

only 48% had web sites. In selection, because of the arrangement of the Education

Directory and because I wanted representative web sites from all levels, I did not

distinguish among grade levels. The sample contained 14 elementary schools, two

middle schools, and four high schools.

Figure 1 - Grade Levels Represented

Grade Levels	Number of Schools Sampled	Percent of Schools Sampled
Elementary Schools	14	70
Middle Schools	2	10
High Schools	4	20

Fourteen school districts were represented in the sample.

Figure 2 - School Districts Represented

School District	Number of Schools Sampled	Percent of Schools Sampled
Alamance-Burlington Schools	1	5
Bladen County Schools	1	5
Brunswick County Schools	1	5
Cabarrus County Schools	1	5
Charlotte-Mecklenburg Schools	2	10
Davidson County Schools	1	5
Jones County Schools	1	5
Macon County Schools	1	5
McDowell County Schools	1	5
Rowan-Salisbury Schools	1	5
Union County Schools	2	10
Wake County Schools	1	5
Wilson County Schools	2	10
Winston-Salem/Forsyth County Schools	4	20

The web sites were accessed on 1 June 2005 and compared to a list of criteria synthesized from the literature (see Fig. 3). Data were entered into a spreadsheet. After the final analysis, all documents linking school names to results were destroyed.

Figure 3 - Criteria for Effective SLMC Web Site

Basic Information:	**Curriculum Support:**
Staff Names	Curriculum or Class Specific Resources
Contact Information (Phone #, Email)	WebQuests
Hours	Student Work
Policies and Procedures	
Mission Statement	**Miscellaneous Features:**
Library News	Parent Resources
Calendar	Teacher Resources
OPAC	Link to Public Library
	Local / National News Links
Reading Encouragement:	
Any Reading Encouragement Feature	**Design and Navigation Features:**
Book Club	Link to School Site
Featured Books	Link from School Main Page
Book Reviews	Each Page Links Home
New Acquisitions	Name of School on each Page
Accelerated Reader/Reading Counts List	Internal Titles on each Page
Reading Links	Date of Last Update
Author Links	Annotated Links
	Dynamic Features
Information Literacy Tools:	Clip Art or Patterned Background
Any Information Literacy Feature	Photos
Link to Search Engine	
Link to Research Database	**Design Problems and Errors:**
Link to NC WiseOwl	Broken Links
Research Guides	Misplaced or Inappropriate Links
Citation Help	Spelling or Grammar Errors
Copyright Info	Animated GIF Clip Art
Literacy Skills Curriculum	Background/Text Difficult to Read

In analysis, I followed Baumbach's guideline: "The feature was counted present if any evidence of its existence was located. For example, whether the Web site provided a complete scope and sequence of information skills and activities, or simply provided a link to how to cite different sources or how to search, information skills was counted as present" (2005, p.8).

Results

Figure 4 - Basic Information

Feature	Number of Sites	Percent of Sites
Staff Names	13	65
Contact Information (Phone #, Email)	12	60
Hours	7	35
Policies and Procedures	6	30
Mission Statement	3	15
Library News	8	40
Calendar	5	25
OPAC	4	20

I compared these study results with the findings of earlier studies conducted by

Poe (1999, p.11-18), Jurkowski (2003, p. 57-59), and Baumbach (2005, p. 9) (see Fig.

11). The result for Staff Names (65%) was consistent with Jurkowski's 68% and

Baumbach's 67%. Baumbach's study found Mission Statements to be more prevalent

(34%) than Jurkowski (18%) or the current study (15%). The feature Library News

compared favorably at 40% over Jurkowski (12%) and Baumbach (25%), however Poe

was able to find the feature on 45% of her sample.

Figure 5 - Reading Encouragement

Feature	Number of Sites	Percent of Sites
Any Reading Encouragement Feature	16	80
Book Club	1	5
Featured Books	6	30
Book Reviews	2	10
New Acquisitions	1	5
AR or RC List	9	45
Reading Links	9	45
Author Links	4	20

The feature Any Reading Encouragement Feature indicates the number of sites that contained any of the following Reading Encouragement features (80%). Half of the sites I analyzed appeared to concentrate on either Information Literacy Tools or Reading Encouragement. Six sites (30%) displayed Reading Encouragement features but none of the Information Literacy Tools features. Four sites (20%) contained Information Literacy Tools features and no evidence of a Reading Encouragement feature. A positive 80% of the sites did include some evidence of a Reading Encouragement program. Baumbach's earlier study found only 62% of sites to feature reading. Baumbach only supplied specific data for one other reading element, Book Reviews (18%). The current study found only 10% of sites to include reviews, but 40% of Poe's sites did. The most popular reading elements on the current study sites were links to Internet sites about reading (45%) and Accelerated Reader or Reading Counts incentive program lists (45%).

Figure 6 - Information Literacy Tools

Feature	Number of Sites	Percent of Sites
Any Information Literacy Feature	14	70
Link To Search Engine	9	45
Link To Research Database	14	70
Link to NC WiseOwl	10	50
Research Guides	6	30
Citation Help	5	25
Copyright Info	1	5
Literacy Skills Curriculum	0	0

Any Information Literacy Feature indicates the number of sites containing any of the following Information Literacy Tools features (70%). Baumbach found only 49% of her sample sites to include Information Literacy Tools features. None of the studied sites displayed an explicit Literacy Skills Curriculum, as was recommended by Baumbach

(2005). I found fewer Links to Search Engines (45%) than previous studies [Poe (75%),

Jurkowski (71%), Baumbach (68%)].

An encouraging 70% of sites linked to Research Databases. This is similar to the

findings of Jurkowski (76%) and Baumbach (67%). Poe only found 20% of her sample

sites to provide access to databases. Many of the research databases in the current study

were provided through NC WiseOwl. NC WiseOwl is a site provided for North Carolina

schools by the Department of Public Instruction. The site provides access to subscription

databases, encyclopedias, and newspapers. Only 50% of the SLMC sites sampled took

advantage of this service and linked to the resource site. Grade level appears to influence

this factor. All of the four high schools and one of the two middle schools linked to NC

WiseOwl. Only five of 14 elementary schools (31%) included the link on their sites.

Baumbach reports a previous study of Florida SLMCs in which she found "fewer than

20% of school library pages link to SUNLINK, the state's union database of school

library media resources—this despite the fact that more than 85% of Florida's public

schools could provide free access to subscription databases through SUNLINK" (2005, p.

9).

Figure 7 - Curriculum Support

Feature	Number of Sites	Percent of Sites
Curriculum or Class Specific Resources	6	30
WebQuests	3	15
Student Work	2	10

My findings for Student Work were the same as Poe's (10%).

Figure 8 - Miscellaneous Features

Feature	Number of Sites	Percent of Sites
Parent Resources	3	15
Teacher Resources	4	20
Link to Public Library	10	50
Local / National News Links	7	35

Parents and teachers represent a significant user population for the SLMC web site, so resources to meet their needs are an important feature for the site. Parent Resources findings in the current study (15%) were comparable to Baumbach's (14%). Jurkowski found 41% of sites to include Teacher Resources, while only 20% of this sample provided these resources.

Figure 9 - Design and Navigation Features

Feature	Number of Sites	Percent of Sites
Link to School Site	14	70
Link from School Main Page	9	45
Each Page Links Home	14	70
Name of School on each Page	12	60
Internal Titles on each Page	12	60
Date of Last Update	5	25
Annotated Links	3	15
Dynamic Features	11	55
Clip Art or Patterned Background	14	70
Photos	8	40

All but two of the study sites (90%) contained Photos, Clip Art or a Patterned Background. Of Baumbach's study sites, 70% included Clip Art and 48% Photos. Only 20% of Poe's sites featured Photos. Seventy percent of the current study sites included the basic navigational links from each page to the home page and from the home page to the main school page. This was comparable to Poe's findings for links to the home page (76.47%, n=17) and links to the school page (85%). Internal Titles were also used on a

significant number of sites (60%). These links and titles are important for users who

enter the sites through supporting pages by way of a search engine. A search may bring

up a SLMC pathfinder or citation guide, but unless that page is linked and titled, the user

will not know who created it.

Baumbach conducted a random sample of 20 SLMC web pages from each of six

states, including North Carolina, finding that "fewer than 30% linked to their libraries

from the main page on their school portal" (2005, p. 8). Of the 20 pages she sampled

from North Carolina, six were Linked from the School Main Page (30%) (p. 9). The

current study found 45% of sites to be Linked from the School Main Page. Baumbach's

primary study sample of 100 sites found 70% to make this important link.

As Poe observes, "a date of last update assures the patron that the information is

current, especially if a date is included on each supporting page" (1999, p. 15). The 25%

of sites that included a Date of Last Update were, unfortunately, quite outdated. The

most recently updated site, accessed on 6/1/05, read 12/13/04, and encouraged students to

read over the Christmas holiday. The oldest recorded update was 8/02, but this site did

not contain time-dependent material. Other studies found greater numbers of sites to

include this feature. In Poe's study, 60% of sites recorded Date of Last Update.

Jurkowski found 53% and Baumbach, 40% with the feature.

I noticed two advantageous design features during my evaluation. Several sites

were designed so external links open in new browser window. This allows users to

remain on the SLMC site while visiting these external pages. One SLMC site requested

that users send email messages to report broken links found on the site. It takes a

significant amount of maintenance time to ensure that all links are active and useful. It

would be helpful for site maintenance to engage the help of users.

Figure 10 - Design Problems and Errors

Feature	Number of Sites	Percent of Sites
Broken Links	11	55
Misplaced or Inappropriate Links	5	25
Spelling or Grammar Errors	9	45
Animated GIF Clip Art	7	35
Background and Text Difficult to Read	2	10

Thirty-five percent of the study sites contained distracting Animated Clip Art.

These dancing icons and scrolling marquees were something of a novelty in the earlier

days of web design, but now mostly annoy users and take focus away from the content of

the site. Design should be kept simple to present content effectively (Simpson, 2003).

Poe found none of her study sites to include scrolling marquees or blinking objects.

Fifty-five percent of the current study sites contained Broken Links, compared with 30%

of Poe's sites. This emphasizes the importance of site maintenance. Software is

available to check for broken links, and save webmasters the time of this task. Some web

sites even offer free downloads.

Figure 11 - Comparison of Study Results

	Poe 1999	Jurkowski 2003	Baumbach 2005	Hunsinger 2005
n =	**20**	**34**	**100**	**20**
Feature	**Percent of Sites**			
Staff Names		68	67	65
Contact Information	90 email	68 email 26 phone	56	60
Policies and Procedures	15	47	40	30
Mission Statement		18	34	15
Library News	45	12	25	40
Calendar		15		25
OPAC	5	35	41	20
Reading Encouragement			62	80
Book Reviews	40		18	10
New Acquisitions		3	12	5
Information Literacy			49	70
Search Engines	75	71	68	45
Databases	20	76	67	70
Citation Help	40			25
Curriculum or Class Specific Resources		12 class specific		30
Student Work	10			10
Parent Resources			14	15
Teacher Resources		41		20
Link to Public Library	35		45	50
Link to Local/National News		56	36 local 31 national	35
Link to School Site	85			70
Link from School Main Page			70	45
Each Page Links Home	76.47 n=17		22	70
Internal Titles	88.24 n=17			60
Date of Last Update	60	53	40	25
Annotated Links	20			15
Clip Art			70	70
Photos	20		48	40
Broken Links	30			55
Spelling or Grammar Errors	30 spelling 35 grammar			45
Animated Clip Art	0			35
Background Difficult to Read	10			10

Figure 12 - Evaluation Data

Feature	High				Middle		Elementary													
	H1	H2	H3	H4	M1	M2	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14
Staff names	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	yes	no	yes	yes	no	no	yes	yes	yes
contact information (phone #, email)	no	yes	no	yes	no	yes	no	yes	yes	yes	yes	yes	yes	yes	no	no	no	no	yes	yes
hours	yes	yes	yes	no	yes	no	no	no	yes	no	no	no	no	no	yes	no	no	no	yes	no
policies and procedures	no	yes	yes	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	yes	yes	yes
mission statement	no	no	yes	no	yes	no	yes	no	no	no	no	yes	no	no	no	no	no	yes	no	yes
library news	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	no	yes	no	yes
calendar	no	no	no	no	no	no	yes	no	yes	yes	no	no	no	no	no	yes	no	yes	no	no
OPAC	no	yes	no	no	yes	no	no	no	no	no	no	no	no	no	no	yes	yes	no	no	yes
any reading encouragement feature	no	no	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
book club	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no
featured books	no	no	no	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	no
book reviews	no	no	no	yes	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	no
new acquisitions	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
AR or RC list	no	no	no	no	no	no	no	yes	yes	no	no	yes	yes	no	yes	yes	yes	no	yes	yes
reading links	no	no	no	yes	yes	no	yes	no	yes	no	yes	no	yes	yes	yes	yes	yes	no	no	no
author links	no	no	no	yes	yes	no	yes	no	no	no	no	no	no	yes	no	yes	no	no	no	no
any information literacy feature	yes	yes	yes	yes	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	yes	yes	no	yes	no
link to search engine	yes	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	no	no	no	no	yes	no
link to research database	yes	yes	yes	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	no	yes	no	yes	no
link to NC WiseOwl	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	no	yes	no
research guides	no	no	yes	yes	yes	yes	no	no	no	no	no	no	no	yes	no	no	no	no	yes	no
citation help	yes	no	yes	yes	yes	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	no
copyright info	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
literacy skills curriculum	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
curriculum or class specific resources	no	yes	yes	yes	no	yes	no	no	no	no	no	no	yes	no	no	yes	no	no	yes	no
webquests	no	yes	no	no	no	no	no	no	no	no	no	no	yes	no	yes	yes	no	no	yes	no
student work	no	no	no	no	yes	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no
parent resources	no	no	yes	no	yes	yes	no	no	no	no	no	yes	yes	no	no	no	no	no	no	yes
teacher resources	no	no	yes	yes	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no
link to public library	no	yes	yes	yes	yes	no	no	no	yes	yes	yes	no	yes	yes	yes	no	no	no	no	yes
local / national news links	yes	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	no	yes	no	no	yes	no	no
Link to school site	no	yes	yes	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	no	yes
link from school main page	yes	yes	no	yes	yes	no	no	no	no	yes	no	yes	yes	no	no	yes	yes	no	yes	no
each page links home	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	yes	yes	no	no
name of school on each page	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	yes	no	no	no
internal titles on each page	yes	yes	no	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	no	no	yes	no
date of last update	no	no	3/18/03	8/4/04	no	no	no	no	no	no	no	no	8/02	1/17/04	no	no	no	12/13/04	no	no
annotated links	no	no	yes	no	yes	yes	no	no	no	no	no	yes	no	no	no	no	no	no	no	no
dynamic features	yes	yes	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	yes
clip art or patterned background	yes	no	yes	no	yes	no	yes	yes	yes	no	yes	yes	yes	no	yes	yes	no	no	no	yes
photos	yes	no	no	no	yes	yes	yes	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes
broken links	no	no	yes	yes	no	yes	yes	no	no	yes	no	yes	yes	yes	no	yes	no	yes	yes	yes
misplaced or inappropriate links	no	no	no	yes	no	no	yes	yes	no	no	no	no	yes	yes	no	no	no	yes	yes	no
spelling or grammar errors	yes	yes	yes	no	no	no	yes	yes	no	no	no	yes	no	yes	yes	yes	no	no	no	no
animated gif clip art	no	no	yes	yes	no	no	yes	yes	no	no	no	yes	no	no	yes	yes	no	no	no	no
background and text difficult to read	no	no	no	yes	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	no	no

Discussion

The results of this study mirror those of previous evaluations of SLMC web sites; effective content and design elements are not consistently applied. Practice does not reflect the knowledge of the field.

Previous studies have evaluated SLMC web sites that were posted in directories and listings by their creators. One might assume that the SLMSs who posted their sites feel sufficiently confident in their content and design to display them. This study attempted to sample the full range of SLMC sites in North Carolina. The creators of these sites are not intentionally inviting a wider audience than their local school community. For this reason, comparison between studies may not be valid.

One criterion was eliminated from the evaluation criteria. Walter Minkel encourages librarians to be the ones administering their web sites, criticizing the fact that the task is often delegated to a technology person (2002). I originally included "site designed and maintained by librarian" in my criteria, however, on most sites, I was unable to determine definitively whether this was the case. In North Carolina public schools, the Department of Public Instruction aims to employ technology specialists at the building level, though some counties still must share them at the system level. Web site design and maintenance often falls under the job description of this person. While I agree that SLMC web site content should be determined by the SLMS, perhaps design and maintenance tasks can be left to the expertise of these technology specialists. A collaboration, with shared administrative access to the web site, would allow both

professionals to contribute their expertise and free time for the other parts of their jobs.

Site maintenance may also include tasks that could be delegated to student helpers.

It is notable that it was necessary to visit 44 school web sites to locate 20 schools

with SLMC web sites. By this sample, fewer than 50% of public schools in North

Carolina may have SLMC web sites. While the creation and maintenance of a SLMC

web site is important to the SLMC program, not every SLMS will judge it to be their

highest priority. The position of the SLMS is demanding and varied, including the

functions of Learning and Teaching, Information Access and Delivery, and Program

Administration (AASL, 1998). The support of school and district administration through

staffing, budget, and school culture are essential to equip the SLMS for these roles and

tasks. In reality, the decision about using resources of time and money to create and

maintain a web site is a complex one with many factors to be weighed. A future study

might investigate the differences in support and school culture between those schools

with SLMC web sites and those without.

It would be interesting to investigate the preference observed in this study

between SLMC sites emphasizing information literacy skills and those emphasizing

reading encouragement features. Half of the study sites emphasized features of one type

to the exclusion of the other. This result may be an artifact of the small sample size or it

may reflect a greater trend. It may represent a way to balance library strengths with web

presence, or it may illustrate programs that really do emphasize one aspect of the

program more than the other. The distribution of these web sites among grade levels was

also of note. Two high schools, one middle school, and one elementary school included

only information literacy skills features. The six schools featuring only reading

encouragement elements were all elementary schools. The distribution might reflect a general trend for elementary schools to place more emphasis on reading encouragement than middle and high schools. A more focused study would be required to determine this.

Conclusion

While the literature now shows a convergence on a consistent set of criteria for quality SLMC web sites, the majority of sites observed are not meeting these criteria. This study's sample of SLMC web sites from North Carolina demonstrates this gap. Those publishing on the topic of SLMC web sites are issuing a challenge to school librarians to develop and maintain quality web sites. These writers repeatedly state that the SLMS web sites need not be technologically advanced, but should present quality resources in a simple, easy-to-use format in order to support the goals of the SLMC and meet the needs of students, teachers, and parents. The task need not be daunting if SLMSs take advantage of the available resources and guidelines. The basic information needed is simple: basic contact information, reading encouragement links, reference databases and relevant internet resources presented in an accessible format. As web presence becomes increasingly important for schools, hopefully, SLMSs will find the administrative support needed to make the SLMC web site a priority.

At the outset of this study, I had hoped to find that a representative sample of SLMC web sites from North Carolina schools would show considerable advances since a similar study conducted by Kimberly Poe in 1999. Such was not the case. In the five years since that study, little change can be observed. In comparison with more recent and larger studies by Jurkowski and Baumbach, the sampled web sites do not show any significant advances, with the possible exception of the North Carolina web sites placing more emphasis on either of the important service areas: information literacy and reading encouragement.

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