DOCUMENT RESUME

ED 368 356 IR 054 872

TITLE	School Library Snapshots: A Brief Survey of Illinois School Library Collections in Three Areas of Science.
INSTITUTION	Illinois School Library Media Association, Fairfield.
PUB DATE	[93]
NOTE	15p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Communication (Thought Transfer); Elementary Secondary Education; Federal Aid; Financial Support; Learning Resources Centers; Library Associations; Library Collection Development; *Library Collections; Library Services; Library Surveys; Needs Assessment; *School Libraries; Science Education; *Sciences; State Aid; State Surveys; Tables (Data)
IDENTIFIERS	Illinois; Library Funding

ABSTRACT

To study the strengths and weaknesses of Illinois school library collections in science and to quantify the need for increased funding for collection development, a survey was completed by over 400 members of the Illinois School Library Media Association. Topics of interest were astronomy, space, the solar system, general biology, ecology, human anatomy, physiology, and hygiene. The findings present a series of snapshots that indicate that the majority of school libraries in Illinois have inadequate book collections in these vital areas of science education. Not only are there too few books on the shelves, there are many that are seriously outdated and sometimes inaccurate. The most obvious reason is lack of money. Only 50% of respondents received any federal funds in 1991-92, indicating that block grants are not being spent on libraries. Many respondents considered the survey useful in analyzing local collections, because 64% did not know whether or not their libraries met state goals. Since the survey only included members of the state school library association, it is assumed that many other school libraries are in worse shape. Recommendations are made for improvement centering on better communication and coordination and working for increased funding. Nine tables and three figures present study findings. (SLD)

School Library Snapshots

A Brief Survey of Illinois School Library Collections in Three Areas of Science

Quite honestly, this project began with some assumptions. We knew that budgets for school library resources have been tight for years while the costs of books and other materials have continued to escalate. We also have heard horror stories whenever the subject of science collections came up for discussion. "I still have books that say, 'Some day man may walk on the moon.'" "I have a book on modern inventions that ends with the vacuum tube" "If I really weeded our science collection, there wouldn't be a book left on the shelves."

We knew the situation was bad. We decided it was time to determine just how bad. Eventually, we set three goals for our survey:

1) To produce statistics which would quantify the need for increased funding for school library collections.

2) To offer local libraries a collection assessment tool which would demonstrate the strengths and weaknesses of their collections.

3) To determine whether Illinois school libraries had resources capable of supporting the State's goals for science education.

A questionnaire was designed to gather general information about each library, along with detailed counts of the numbers and ages of books in three specific fields of science:

1) Astronomy, Space, and the Solar System;

2) General Biology and Ecology; and

3) Human Anatomy, Physiology, and Hygiene.

These fields were selected because they encompass subjects which are taught across the K–12 curriculum and because they are areas in which many new developments have occurred over the past 25 years.

A Scantron form was utilized to make the survey easy to complete and easy to tabulate. Over 800 questionnaires were sent to members of the Illinois School Library Media Association (ISLMA), and an impressive 409 were returned.

Since all respondents were members of the state's professional organization, the responses are not necessarily typical of all schools in Illinois. They do not reflect the many elementary schools where there is no professional staff, or those schools in situations where one media specialist is responsible for several libraries. Being ISLMA members, respondents had an interest in professional issues and by self-selection were concerned about collection development. It may be assumed that these responses reflect better than the average school library collections in Illinois.

Who Responded?

Grade Level: Of the 409 responses, 40% came from elementary schools and 15% from junior high schools, meaning that these lower grades were somewhat underrepresented. A total of 134 responses from high schools constituted 33% of the survey group. The remaining 12% were categorized as "other" and included a wide variety of grade combinations from K–12 to preschool–grade 3. Private and parochial schools were represented by 7% of the responses. (See Table 1.)

Table 1: Responses by Grade Level

	Public Schools	Private Schools	Total
Elementary (K–5, K–6, K–8)	153	9	162 (40%)
Junior High (6–7, 6–8, 6–9)	59	2	61 (15%)
High School (9–12, 10–12)	123	11	134 (33%)
Other	47	5	52 (12%)
Total	382 (93%)	27 (7%)	409 (100%)

School Size: Respondents reported a wide range of school sizes based on student population. The largest category (46%) had populations from 351 to 750 students. 25% were smaller and 29% were larger. (See Table 2.)

Table 2: Responses by Student Population

	<350	351–750	751–1,000	1,001–1,500	>1,500	Total
Elementary	55	97	5	4	1	162 (39%)
Junior High	11	30	20	0	0	61 (15%)
High School	19	36	11	23	45	134 (33%)
Other	18	26	3	4	1	52 (13%)
Total	103 (25%)	189 (46%)	39 (10%)	31 (8%)	47 (11%)	409 (100%)

Geographic Location: Responses came from all areas of the state. Respondents were asked to identify their regional library system and 87% did so, using names of systems in existence before recent mergers and consolidations. Those in the northern part of the state represented 52% of the total responses, with 35% coming from the southern systems and 13% not indicating system location. Unfortunately, the City of Chicago was greatly underrepresented, with only five responses. (See Tables 3a–3b.)

A Look at Total Collections

Collections tended to be larger than the survey designers anticipated, with 45% having more than 10,000 book volumes and 30% having over 50 current periodical titles. Nevertheless, there were seven schools (including one high school) in this select group with less than 1,000 books and 45 schools with fewer than 10 periodical titles. (See Figures 1a–1b.)

Table 3a: Responses by System (Northern)

Bur Oak Library System	14 (3%)
Chicago Library System	5 (1%)
DuPage Library System	46 (11%)
Northern Illinois Library System	24 (6%)
North Suburban Library System	56 (14%)
Starved Rock Library System	7 (2%)
Suburban Library System	61 (15%)
Total	213 (52%)

Table 3b: Responses by System (Southern)

Corn Belt Library System	9 (2%)
Great River Library System	3 (1%)
Illinois Valley Library System	18 (4%)
Kaskaskia Library System	8 (2%)
Lewis & Clark Library System	3 (1%)
Lincoln Trail Libraries System	19 (5%)
River Bend Library System	23 (6%)
Rolling Prairie Library System	30 (7%)
Shawnee Library System	21 (5%)
Western Illinois Library System	10 (2%)
Total	144 (35%)

No System Given: 52 (13%)

In the audiovisual department, we also found larger numbers than anticipated. Films and videos constituted the strongest section of AV resources, with 55% having over 50 titles and only 15 libraries reporting none. This is especially surprising since instructions were given to *not* include shared collections such as film co-ops. On the other hand, many comments indicated that these AV collections were old and in poor condition. (See Figure 1c.)

Figure 1a: Collections (Book Volumes)

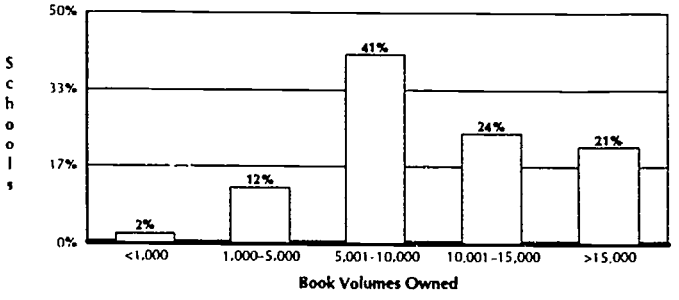
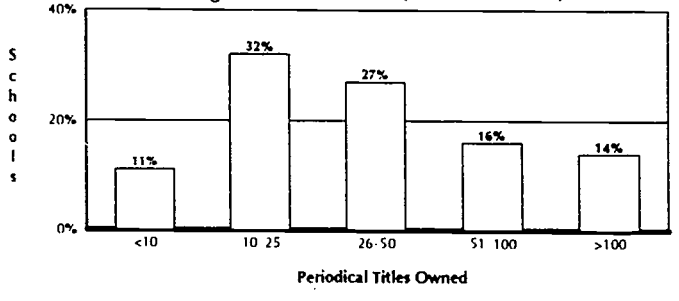
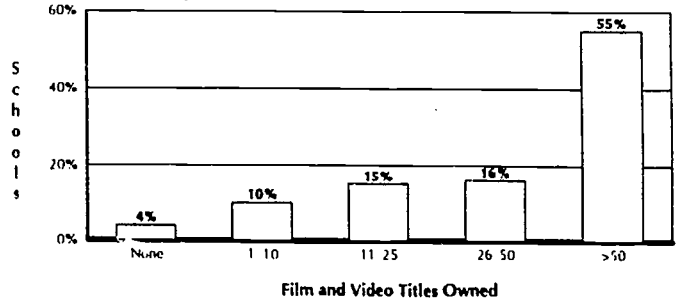


Figure 1b: Collections (Periodical Titles)



Newer items such as CD-ROMs and laser disks were less common, although we were pleasantly surprised to find that 222 libraries (54%) have at least one CD-ROM, and 30 libraries have 10 titles or more. Fewer libraries have laser disks, but 30% have at least one title and 31 schools (7%) have 10 titles or more. (See Figures 1d–1e.)

Figure 1c: Collections (Film and Video Titles)



Expenditures for Library Resources

Of particular interest was the amount of money spent for library resources, not including equipment. It was a pleasant surprise to find that 75%

spent over $2,000 in 1991–92. That amount is less impressive, however, when calculated as dollars per student. While 158 schools (39%) spent over $10 per student, nearly 20% (79 schools) spent less than $3 per student, and nine schools (including three high schools) spent less than $1 per student. (See Table 4.)

Illinois figures look even more pathetic when compared to a recent *School Library Journal* report[1] which indicates an average resource budget (including equipment) of $14,171 for the same year and an average expenditure of $8.38 per student for books alone. Since a few high expenditures can make these averages misleading, the *SLJ* report also indicates a median figure, but again, the Illinois statistics fall short of a national median budget of $9,609 ($5.88 per student) for books.

Figure 1d: Collections (CD-ROM Titles)

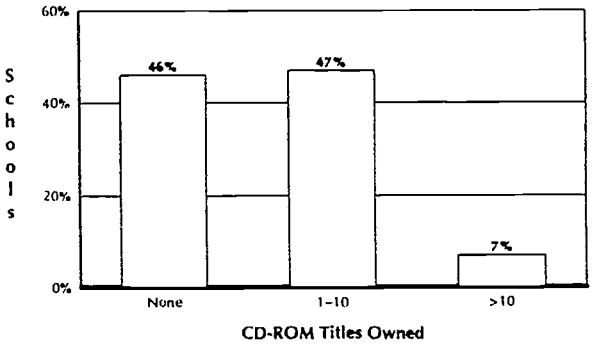
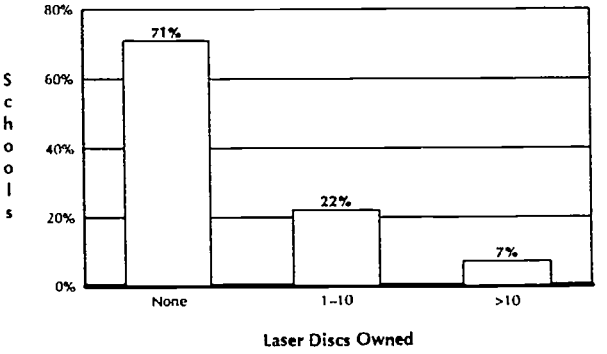


Figure 1e: Collections (Laser Discs)



Given that the average price of a children's hardcover book was $16.64 in 1992 and the average price of an adult book was $45.85,[2] it's clear that nearly two-thirds of Illinois school libraries can't buy one book per student even if all their resource money is spent on books! Since many schools also are using their limited funds for more expensive computer software, CD-ROMs, laser disks, and audiovisual materials, the actual book purchases are even more limited.

Table 4: Expenditures Per Student

	<$1	$1–3	$4–7	$8–10	>$10
Elementary	3	44	36	25	54
Junior High	0	13	18	13	15
High School	3	9	30	28	64
Other	3	4	12	8	22
Total	9 (2%)	70 (17%)	96 (25%)	74 (18%)	155 (38%)

Sources of Funds

To give yet another perspective on school library funding, we asked respondents to check all the categories of funds received for library resources in 1991–1992. Logically, the category checked most often was "District Budget," with 94% indicating they received some funds from this source.

Other sources of funds (in order of frequency) were State Grants, Donations, Federal Grants, and Other (Endowments, Fees, Private School Tuition, etc.). While the 6% who did not receive any District Funds could be those 27 private and parochial schools, there is no logical explanation for the fact that only 58% reported receiving State funds. The year 1991–92 was the second time that the small but significant state per capita grants were made available to schools. (See Table 5.)

Table 5: Sources of Funds

	District Budget	PTA/Donations	State Grants	Federal Grants	Other
Elementary	150	116	75	68	38
Junior High	58	39	39	33	15
High School	122	37	91	77	26
Other	48	31	29	22	14
Total	378 (94%)	223 (55%)	234 (58%)	200 (50%)	93 (23%)

Since many checked several categories, total equals more than 100%.

Comments from respondents added a human dimension to these numbers. "Our annual budget is $1,500 for 1,450 students" "Our budget doesn't look bad but we can't buy books because we are responsible for buying computer software" "Our library is funded *only* by PTA donations" "We had a zero budget again this year — we haven't bought books in *years*!"

Astronomy, Space, and the Solar System

Respondents were asked to count book titles in the Dewey categories of 520–523 and 629 by date of publication. Although some books on automobiles may have been included, the majority dealt with space (including space travel and the solar system). Over 88% reported that this subject is covered in their school's curriculum. Only 8% said it was not covered and 4% said they did not know.

Given the high percentage of schools which include this topic in the curriculum, it is shocking to find that almost half (46%) have fewer than 20 books in the field. On the other side of the coin, 40% report having 75 books or more on the topic, but 76 of this group of 162 schools report that more than 75 of their titles were published before 1970. In other words, even the largest collections are out of date. (See Tables 6a–6b.)

Table 6: Astronomy, Space, and the Solar System

Table 6a: Number of Titles in Subject Area

	0–20	21–30	31–50	51–75	>75
Elementary	70	2	5	17	69
Junior High	31	2	2	4	21
High School	64	2	6	10	51
Other	21	0	3	4	21
Total	186 (46%)	6 (1%)	16 (4%)	35 (9%)	162 (40%)

Old titles are not necessarily bad titles, as several of our respondents reminded us. There are certainly aspects of astronomy which haven't changed since 1970. On the other hand, students using these dated collections won't learn about the first Skylab experiments

(1973), the Columbia flight which first put a man in orbit (1981), Sally Ride becoming the first woman in space (1983), or the Challenger disaster (1986).

Looking at newer titles, 43% of the total reported having only five or fewer titles published since 1990 and only 23% have as many as 20 new titles. Since respondents were asked to include reference resources in their counts, it's clear that most students have very few opportunities to read about current developments in a subject of continuing fascination to young people. (See Table 6c.)

Table 6b: Number of Titles Published Before 1970

	0–10	11–20	21–50	51–75	>75
Elementary	31	38	61	17	16
Junior High	9	11	19	9	14
High School	14	15	44	22	39
Other	13	9	15	3	7
Total	67 (17%)	73 (18%)	139 (34%)	51 (12%)	76 (18%)

Table 6c: Number of Titles Published 1990–1993

	0–5	6–10	11–15	16–20	>20
Elementary	59	40	17	17	29
Junior High	29	15	6	5	7
High School	64	2	6	10	51
Other	23	12	2	4	6
Total	175 (43%)	69 (17%)	31 (8%)	36 (9%)	93 (23%)

General Biology and Ecology

A similar pattern emerged when we looked at responses regarding collections in the Dewey categories of 333, 363, 574, and 591. The subjects of General Biology and Ecology were covered in 91% of the schools, but once again, nearly half (47%) had only a small number of titles covering the subject, and those who had more reported a high percentage dated before 1970. (See Tables 7a–7c.)

Table 7: General Biology and Ecology

Table 7a: Number of Titles in Subject Area

	0–25	26–40	41–75	76–100	>100
Elementary	72	3	6	13	67
Junior High	33	0	3	4	19
High School	60	6	6	4	55
Other	21	1	4	2	19
Total	186 (46%)	10 (3%)	19 (5%)	23 (6%)	160 (40%)

Once again, this is a subject with many significant developments since those older books were published. Among them are the Three Mile Island Explosion (1979), the Exxon Valdez Oil Spill (1989), and the Chernobyl Fire (1986).

Comments from respondents illustrate the real problems of trying to teach with such outdated resources. One person noted a book on landscaping which recommends using asbestos stepping stones in the garden! Another reported having a book which recommends using DDT for pest control!

Human Anatomy, Physiology, and Hygiene

Our third topic covered the Dewey categories of 611–613, and was included in the curriculum of 96% of the schools. While these subjects were taught most often, this also was the field where the largest percentage (48%) reported very small collections. (See Table 8a.)

Fortunately, the number of extremely old titles (published before 1970) also was smaller, with only 9% having 50 or more such relics in their collections. On the other hand, 66% had fewer than six new titles (published 1990–1993) in this field. One dramatic example illustrates the real danger of such inadequate collections: a respondent reported having a title which extols the benefits of smoking as a means of healthy relaxation! (See Tables 8b–8c.)

Table 7b: Number of Titles Published Before 1970

	0–20	21–40	41–75	76–100	>100
Elementary	51	42	42	10	15
Junior High	10	14	21	9	6
High School	17	20	33	18	44
Other	16	9	14	4	4
Total	94 (24%)	85 (21%)	110 (28%)	41 (10%)	69 (17%)

Table 7c: Number of Titles Published 1990–1993

	0–10	11–25	26–40	41–60	>60
Elementary	76	47	21	9	7
Junior High	33	0	3	4	19
High School	45	37	24	10	17
Other	17	14	9	6	1
Total	171 (43%)	98 (25%)	57 (14%)	29 (7%)	44 (11%)

A Closer Look at Collections with the Fewest Titles

When we pulled the responses of the libraries with the smallest collections in these three fields, we found 186 schools with minimal collections in Astronomy, 186 in Biology, and 192 in Anatomy. Of these three groups, 173 had minimal collections in all three areas.

Table 8: Human Anatomy, Physiology, and Hygiene

Table 8a: Number of Titles in Subject Area

	0–15	16–30	31–50	51–75	>75
Elementary	72	18	24	23	24
Junior High	31	2	10	6	9
High School	66	4	9	16	37
Other	23	2	7	9	4
Total	192 (48%)	26 (6%)	50 (13%)	54 (14%)	74 (19%)

We compared these 173 schools with the group as a whole and found they were surprisingly similar. They were slightly more likely to be junior highs or high schools, slightly more likely to have a student population of 351–750, and a little more likely to be in the southern part of the state. They were slightly more likely to have over 50 periodical titles, but their total book

collections were almost identical to those of the group as a whole. In other words, inadequate science collections appear at all grade levels, in schools of all sizes throughout the state. (See Figures 2a–2e.)

The one area where these 173 schools differed significantly was in their expenditures per student. A total of 52% of these schools spent less than $8 per student, compared to 44% of all respondents. It should come as no surprise that inadequate funding equates with inadequate collections. (See Figure 2f.)

Table 8b: Number of Titles Published Before 1970

	0–10	11–20	21–50	51–75	>75
Elementary	60	54	35	9	2
Junior High	20	15	24	1	0
High School	38	31	43	14	6
Other	22	9	11	1	3
Total	140 (35%)	109 (27%)	113 (28%)	25 (6%)	11 (3%)

Table 8c: Number of Titles Published 1990–1993

	0–5	6–10	11–15	16–20	>20
Elementary	113	24	9	7	6
Junior High	46	9	3	1	2
High School	73	24	10	8	17
Other	32	9	2	2	1
Total	264 (66%)	66 (16%)	24 (6%)	18 (5%)	26 (7%)

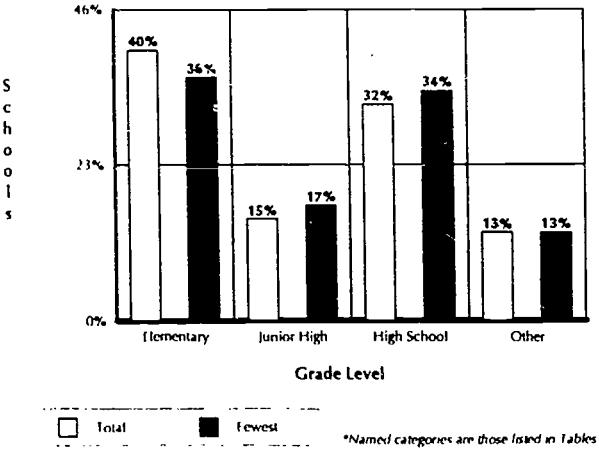
Use of the Collection

Another angle in our series of snapshots was taken from the point of view of collection use. We asked, "Do science classes use your library?" The majority (55%) responded "occasionally," while 24% said "often" and 21% said "rarely" or "never."

Looking at collection use from another perspective, we asked "Do students select science books and magazines when they have 'free choice' of reading matter?" In this case, the number responding "often" increased to 32%, with another 42% checking "occasionally."

From these figures, it looks as if both science classes and individual students are using their school libraries at least "occasionally" in about 75% of the schools, and there is a distinct tendency for individual students to be more frequent users than classes.

Figure 2a: Total Respondents Compared to Those with the Fewest Books in Named Categories,* by Grade Level



*Named categories are those listed in Tables 6 & 8

This section of the questionnaire drew comments which put a different light on the matter of collection use. Many indicated that science teachers don't give library assignments or will accept research only if based on current periodicals. Several complained that science departments have their own resources, separated from the central library. Others pointed out that

Figure 2b: Total Respondents/Fewest Books in Named Categories, by School Size

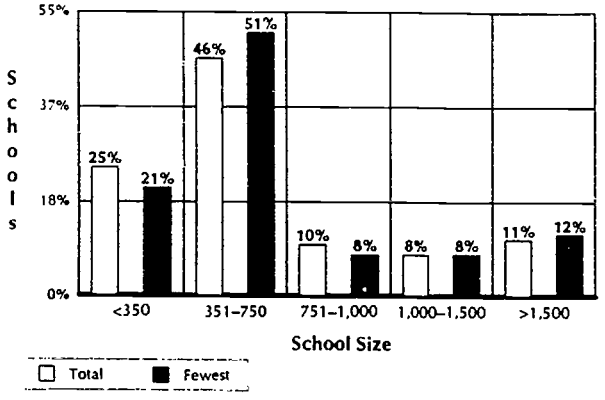


Figure 2c: Total Respondents/Fewest Books in Named Categories, by System Membership

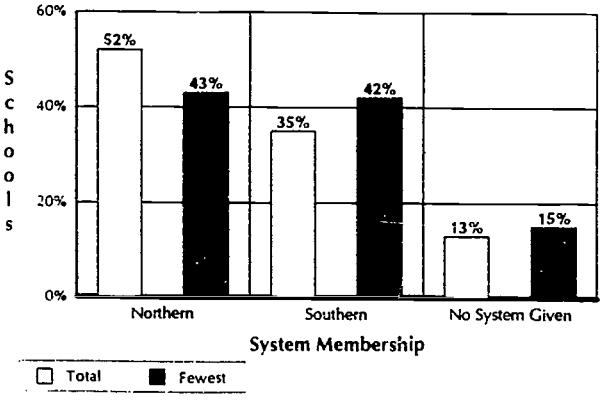


Figure 2d: Total Respondents/Fewest Books in Named Categories, by Total Book Collection

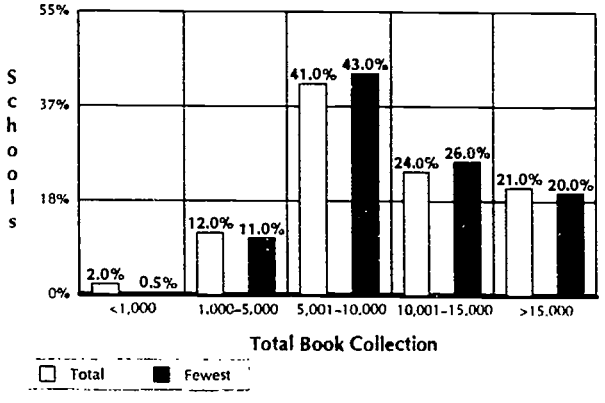
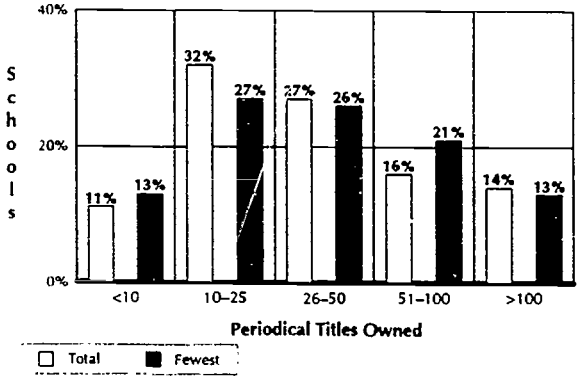
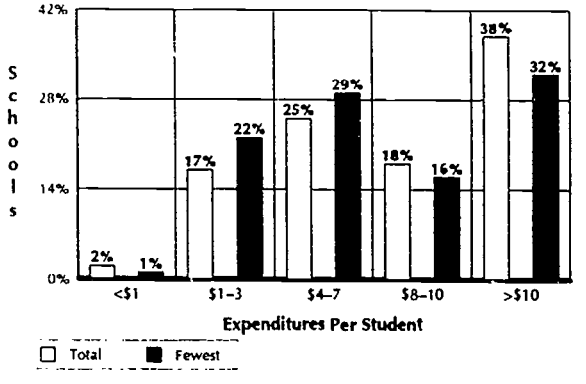


Figure 2e: Total Respondents/Fewest Books in Named Categories, by Periodical Titles Owned



science books are so expensive, they don't buy them. This seems to be a chicken-and-egg situation. If the science collection is small and outdated, it's no wonder that science teachers don't give library assignments. On the other hand, librarians with extremely limited funds can hardly be blamed for purchasing in the fields that receive the most use.

Figure 2f: Total Respondents/Fewest Books in Named Categories, by Expenditures Per Student



Goals

Perhaps the most startling statistics of this study appeared when we looked at library collections from the perspective of the State Goals. We asked, "Do you personally feel that your library's science collection supports the four Illinois Education Goals for Biological and Physical Science?" A total of 60 respondents (15%) said "yes" and 87 (22%) said "no," but a significant majority (56%) said they had never seen the goals! (See Table 9.)

While these goals have been published in several places (including the recently revised "Illinois School Library Media Program Guidelines"), this response certainly sends a message to both the State Board and the professional organization. If school libraries are important and if these goals are important, a much greater effort to relate the two needs to be made.

Table 5: Answers to the question "Do you personally feel that your library's science collection supports the four Illinois goals for Biological and Physical Science?"

Yes	59	15%
No	87	21%
Don't Know	31	64%
Haven't Seen Goals	224	
No Answer	8	

With that in mind, we took a closer look at those 60 schools where the librarians felt their library collections could support the State Goals. Comparing them with the total group, we found that they were:

- considerably more likely to be elementary or junior high schools.
- somewhat more likely to have a student population from 751 to 1,000 or over 1,500.
- spread across the state in almost identical proportions to the group as a whole.
- considerably more likely to have large book collections.
- somewhat more likely to have larger periodical collections.
- considerably more likely to be spending over $10 per student on resources.
- much more likely to have both science classes and individual students using the library often. (See Figures 3a–3h.)

Figure 3a: Total Respondents Compared to Those Whose Libraries Meet Goals, by Grade Level

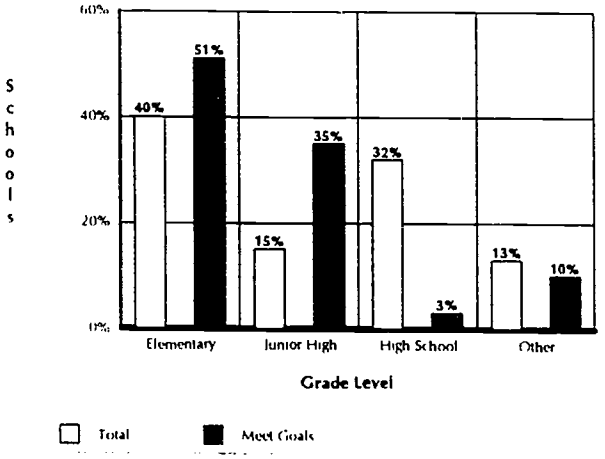


Figure 3b: Total Respondents/Meet Goals, by School Size

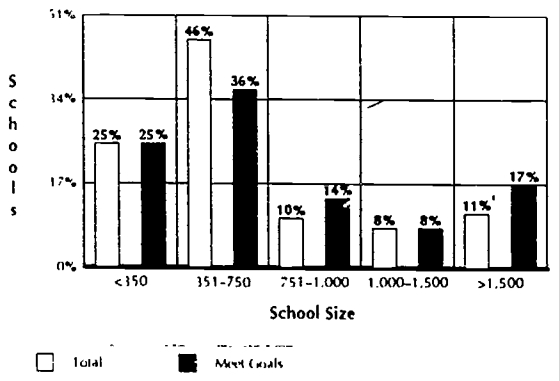


Figure 3c: Total Respondents/Meet Goals, by System Membership

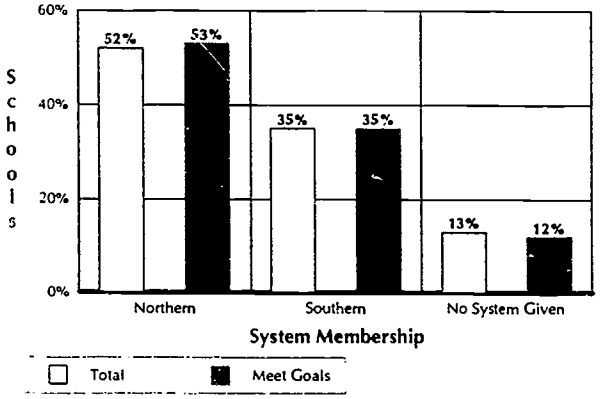


Figure 3d: Total Respondents/Meet Goals, by Total Book Collection

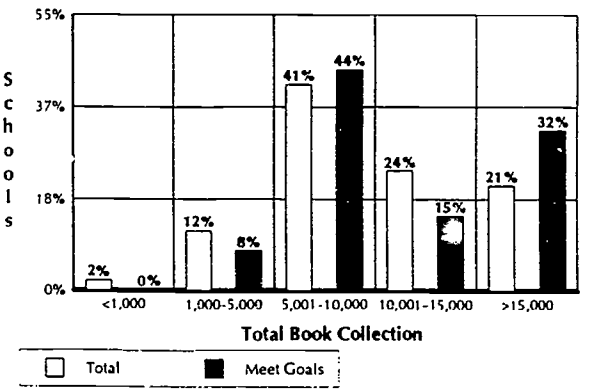


Figure 3e: Total Respondents/Meet Goals, by Periodical Titles Owned

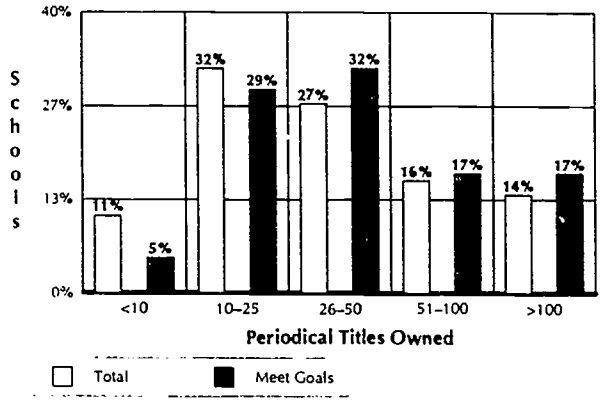


Figure 3f: Total Respondents/Meet Goals, by Expenditures Per Student

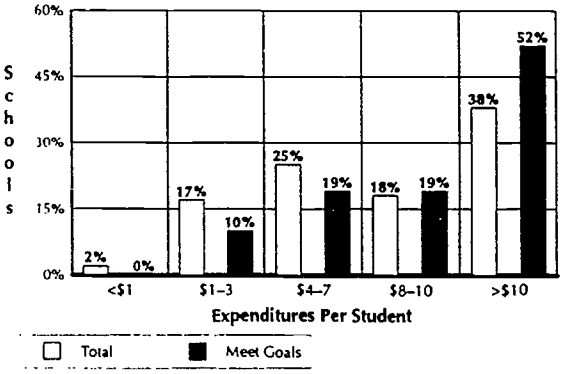


Figure 3g: Total Respondents/Meet Goals, by Frequency of Science Classes Using the Library

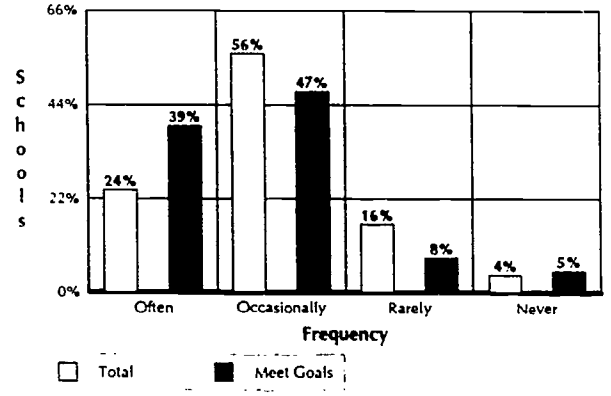
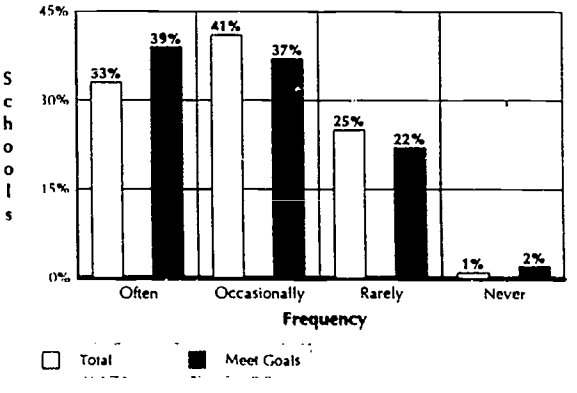


Figure 3h: Total Respondents/Meet Goals, by Frequency of Students Selecting Science Materials as "Free Choice"



Conclusions

This survey presents a series of snapshots which cannot take the place of a detailed examination in which an individual school relates its library resources to its educational goals. Nevertheless, the snapshots we gathered provide strong evidence that the majority of school libraries in Illinois have woefully inadequate book collections in three vital areas of science education.

Statewide Problem

Not only are there too few books on these subjects, but many of the books on the shelves (in some cases, *all* of the books on the shelves) are seriously outdated and sometimes dangerously inaccurate. This shocking situation is not limited to small schools or to elementary grades or to one part of the state. It is a statewide problem.

Inadequate Funding

The most obvious reason for this inadequacy is lack of money. The number of books dating back before 1970 clearly reflects the federal grants of the 1960s. The fact that only 50% of the respondents received any federal funds in 1991–92 indicates that federal "block grants" are not being spent on libraries. Even the recently initiated Illinois school per capita grants don't seem to be reaching 42% of the library collections. While these grants have been small (under 20¢ per student in 1991–92), they were made available to schools across the state and could have been used for a few new books.

Analysis Useful

From the comments of respondents, we learned that many felt this survey was useful in analyzing local collections. Many said, "I just didn't realize how bad it is" or "My principal was shocked." Several said they would use the same approach to gather statistics on other subjects, and quite a few wrote that they intended to "*really* weed, even if it does leave great gaps on the shelves."

Coordination Needed

The fact that 64% of the respondents didn't know whether their library collections met state goals was shocking, especially since the majority of these respondents said they "hadn't seen" the goals. This failure to integrate the library's science collection with the goals for learning in the sciences was further emphasized by comments indicating poor communication between librarians and science teachers, especially in the high schools.

School Libraries Are Key

While there may be a variety of reasons for this lack of coordination, two recent publications provide the best reasons why it must not continue. In Colorado, "The Impact of School Library Media Centers on Academic Achievement" documents the importance of the school library. In that study, it was found that the size of a school's library media center staff and collection is the best predictor of academic achievement.[3] Meanwhile, in reviewing research on reading, Stephen Krashen has shown that voluntary reading is the best predictor of such

essential skills as reading comprehension and vocabulary growth.[4] He also documented that two factors directly related to increased voluntary reading were having a library media specialist in the school and having a larger school library collection. In other words, the school library is key to successful education!

One other recent survey emphasizes the tragedy of the statistics we found. In *School Library Journal*'s 1993 survey of school library staffing, Illinois ranked 40th of the 50 states and the District of Columbia![5] In Illinois, there are 903 students for every certified media specialist. Only 11 states had higher numbers of students per media specialist. Since our ISLMA study surveyed only members of the organization, it did not include the many schools without any school library media specialist. It can be assumed that the picture in those schools would be even worse.

If Illinois students are going to be prepared for a future which is increasingly dependent on an understanding of scientific complexities, they must have better science resources in their libraries. This year, four out of six Nobel Prize winners in Science were Americans.[6] Their ages range from 42 to 52, meaning that they were in high school during a period of relatively generous funding for school libraries. Who will be the Nobel Prize winners 25 years from now, when today's students are in their forties?

Specific Recommendations

There are a variety of activities which ISLMA and individual librarians might pursue in working to improve the sad state of school library science collections. Many of these activities are already underway; others should be considered.

1) Continue to encourage teams of school librarians, administrators, community librarians, and science teachers to work together through such projects as professional development conferences on "Integrating Library Resources and Personnel into the School Improvement Process."

2) Continue to work for better funding at national, state, and local levels by publicizing the inadequacies and encouraging local librarians to take advantage of every opportunity for increased funding.

3) Promote the use of such unique Illinois resources as the Illinois Math and Science Academy and the Leon Lederman Teacher Resource Center to assist librarians in developing science collections.

4) Offer guidelines and/or workshops on weeding.

5) Encourage cooperative collection development among schools so that limited funds may be stretched further. With increasing automation, interlibrary loan is a practical way for schools to share resources. If collection development is coordinated, individual schools can develop better collections in a specific area and share these resources with others.

6) Continue to encourage both the inclusion of librarians in instructional planning and the development of flexible scheduling which makes such cooperation possible.

7) Find ways to communicate to parents the importance of school libraries and their desperate needs.

In the words of one of our respondents, "Most of our kids are being cheated."

ISLMA Research & Development Committee

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End Notes

1) Miller, Marilyn L. and Marilyn Shontz. "Expenditures for Resources in School Library Media Centers FY 1991–92." *School Library Journal*, October 1993, pages 26–36.

2) Ibid, page 30.

3) Lance, Keith Curry, Lynda Welborn, and Christine Hamilton-Pennell. *The Impact of School Library Media Centers on Academic Achievement.* Castle Rock, Colorado: Hi Willow Research and Publications, 1993.

4) Krashen, Stephen. *The Power of Reading.* Englewood, Colorado: Libraries Unlimited, 1993.

5) Satowski, Michael and Randy Meyer. "States of Inequality, School Library Staffing Survey 1993." *School Library Journal*, June 1993, pages 34–36.

6) "Genes, Pulsars and Slavery." *Time*, October 25, 1993, page 46.

Typing by Alice McKinnis
Charts, tables, design, and layout by Don Nims
Produced at DuPage Library System, Geneva, Illinois, November 1993