cpt Special Report
Committee on Professional Training

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Report on the Results of the CPT Library Survey in Fall 2000

Executive Summary

- Out of 617 surveys, 416 were returned; this 67% return rate reflects the importance of chemical information issues to the academic chemistry community.
- Library budget cuts are beginning to have a noticeably negative impact on education in chemistry. Further reductions would have significant negative consequences for chemistry education.
- Expenditures for all forms of chemical information vary drastically depending on highest degree granted. Institutions at which the doctoral degree is the highest offered in chemistry spend almost 1 order of magnitude more on chemical information than do institutions conferring only bachelor's degrees. Institutions at which the master's degree is the highest degree offered in chemistry are especially struggling to afford chemical information.
- A "digital divide" is developing in the ability of institutions to provide modern electronic access to chemical information: doctoral institutions are far more able than master's or bachelor's institutions to afford significant numbers of electronic journal subscriptions and/or access to *Chemical Abstracts* through the *SciFinder Scholar* gateway.
- Despite significant improvements in electronic gateways to chemical information and databases, the use of chemical information in undergraduate chemistry curricula appears to be diminishing.

Introduction

In fall 2000, the Committee on Professional Training (CPT) undertook a survey of all ACS-approved programs in chemistry to ascertain the current situation with respect to library and chemical information resources and accessibility of these resources to undergraduate students. This survey was motivated in part by the rapidly changing landscape for chemical information resources in recent times as a result of the explosive growth of electronic forms of chemical journals and databases. Specifically, CPT seeks to understand how the costs of electronic forms of chemical information are affecting the ability of institutions of different sizes and missions to meet their objectives in the education of undergraduate chemistry students. In addition, CPT is interested in the access to and use of chemical information resources that undergraduate chemistry students have as part of their education. This interest is derived from the need for an informed consideration of appropriate guidelines for approved programs with respect to the inclusion of education in chemical information resources.

The survey was sent to all 617 ACS-approved institutions. 416 surveys were completed and returned. This 67% return rate is unusually high and reflects the importance of these issues to the academic chemistry community. The survey data are tabulated in Appendix 1. 51% of the responses were from schools at which the highest degree offered in chemistry is a B.S. or B.A. These institutions are denoted as B schools in the following discussion. 18% and 31% of the responses were from institutions at which master's (M.A. or M.S.) and Ph.D.s are the highest degrees offered in chemistry. These institutions are denoted as M and D schools, respectively, in this report. Overall, the distribution of survey responses received reflects the distribution of institution size for ACS-approved programs.

Institution Information

Part A of the survey collected institutional information that helps to define the context within which the chemical information resources of a particular institution are used. In general, when only undergraduate chemistry majors, chemistry graduate students, chemistry postdoctoral researchers, and

chemistry faculty and academic staff are considered, the demands on the chemical information resources of a particular institution generally scale with size, and hence, highest degree. Using a weighted average of size from this information, the number of users of these resources from the chemistry department at B institutions is approximately 60. At M and D institutions, this number increases to 120 and 280, respectively. However, a diverse range of departments in other disciplines at these institutions also require routine access to chemical information. The departments cited most frequently (i.e., in more than 25% of the responses) from those specifically listed on the survey were biology, physics, biochemistry, environmental science, geology, chemical engineering, and materials science. Appendix 2 lists all of the departments reported as needing routine access to chemical information. Obviously, the number of users from these other areas will also generally scale with institution size. Thus, the demands for access to chemical information at D institutions is tremendous, with progressively less, although still significant, demand at M and B schools.

Impact of Library Budgets on Chemistry Department Educational Mission

Part B of the survey asked departments to assess their chemical information resources. In terms of the adequacy of their collective chemical information resources for meeting their educational mission (Figure 1, top), only 49% of departments consider their resources adequate: 56% for B institutions, 39% for M institutions, and 45% for D institutions. A significantly larger number of M institutions (42%) consider their resources only marginally adequate compared with B (36%) or D (33%) schools. Somewhat or severely inadequate library holdings are reported by 8% of B institutions, 20% of M institutions, and 22% of D institutions. 20% of institutions reported library budgets that had fallen in the past five years; again, the B schools are a bit better off with only 16% reporting decreases. 31% of all schools reported increased library budgets, but this fraction varies considerably by institution size: 29% at B schools, 18% at M schools, and 42% at D schools. When asked to anticipate future budget cuts over the next five years, 27% of schools anticipate equal or greater cuts than in the past five years, although 30% were unable to predict future cuts.

Recent budget cuts have had a noticeably negative impact in 49% of the institutions, although only 12% report major or significant negative impact (Figure 1, bottom). Nonetheless, it seems that little cushion remains in the budgets of academic institutions: 84% of schools characterize the impact of potential future budget cuts on their educational mission as negative, with 36% expecting major or severe impact. Negative impact from future budget cuts is anticipated to be most severe at D institutions, with 49% reporting major or severe negative impact. The corresponding results are 29% at M institutions and 30% at B institutions.

To ascertain information about the impact of changing to electronic forms of chemical information on undergraduate education in chemistry, the survey asked departments to rate the accessibility of electronic chemistry journals and electronic subscriptions to *Chemical Abstracts* to their undergraduates.

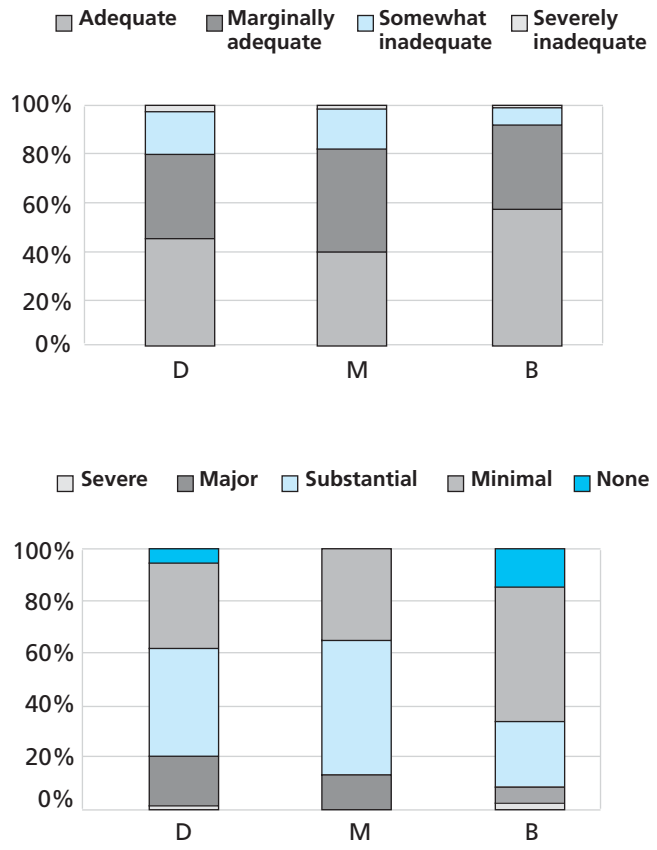

Figure 1. Top: Response to question about adequacy of chemistry library holdings in meeting educational mission of institution. Bottom: Negative impact of recent library acquisition budget cuts.

10% of institutions report no electronic access to journals, but 57% are satisfied with access to electronic journals by their undergraduates, rating this access excellent or good. Perhaps as expected, access for undergraduates at D institutions is characterized as excellent or good (64%) more frequently than at M or B schools (both 53%).

When asked how access of undergraduates to electronic journal subscriptions could be improved, respondents provided extensive written comments. 60% of these comments included remarks about the costs of electronic journal subscriptions being a limitation to better access by undergraduates. Specifically mentioned in many cases was the burden of the additional charge for electronic access to ACS journals for which print subscriptions were received. Other ways frequently cited for improving access to electronic journals for undergraduates included better education and publicity about existing electronic journal subscriptions and how to access them (17% of comments) and desktop access on-campus through IP recognition and off-campus through proxy servers (13% of comments).

In response to a question about the quality of access to electronic subscriptions to *Chemical Abstracts* for undergraduates, the level of satisfaction was not as high; only 52% of institutions reported excellent or good access. When broken down by institution type, 56% of B schools characterized access as adequate (excellent or good), whereas only 40% of M schools and 51% of D schools reported excellent or good access. Moreover, 14% of M institutions reported no electronic

access to *Chemical Abstracts* compared with 8% at B and D institutions. These responses highlight special problems for M institutions in providing electronic forms of chemical information resources, a theme that is supported by other data from this survey.

Narrative responses to a question about how to improve electronic access to *Chemical Abstracts* for undergraduates elicited a similarly large number of responses as the corresponding question about electronic journal access. Again, the cost of such access to academic institutions arose in 66% of the responses either explicitly (43%) or through concerns about access time limitations (15%) or number of concurrent users (8%).

Library Chemistry Holdings and Budgets

Part C of the survey provided detailed numerical information about library holdings and budgets. This section was completed by a member of the library staff who was familiar with the chemistry holdings and acquisitions at each institution. In light of the rapid changes occurring in electronic forms of chemical information and the resulting increased acceptance and use of these forms, some of the statistics collected through this survey were out of date even before they were compiled. We know this to be particularly true of subscriptions to *SciFinder Scholar* for electronic access to *Chemical Abstracts*. Despite the dated nature of these numbers, the results are reported here insofar as they represent a snapshot of facts and opinions as of fall 2000. Where possible, the most recent data are included. Responses pertaining to costs associated with various forms of electronic access to *Chemical Abstracts* have also been omitted from the tabulated data. The pricing schemes for these media are varied and complex; unfortunately, the survey requested information about these costs in a manner that prohibits straightforward interpretation of the responses. Therefore, so as not to further confuse this issue, CPT has decided not to report these figures.

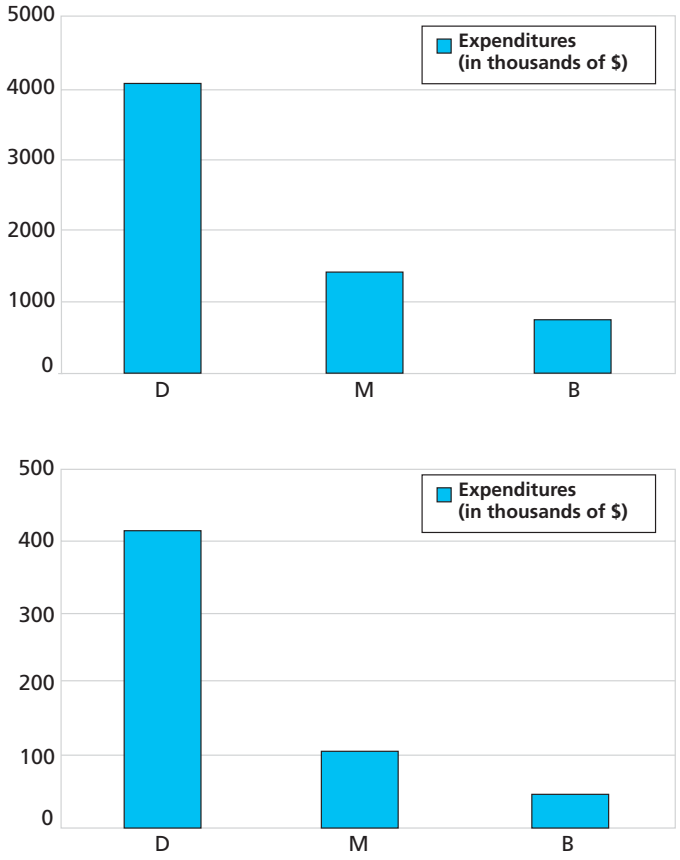

Figure 2. Average amount spent on library acquisitions. Top: Total library expenditures. Bottom: Library expenditures for chemistry.

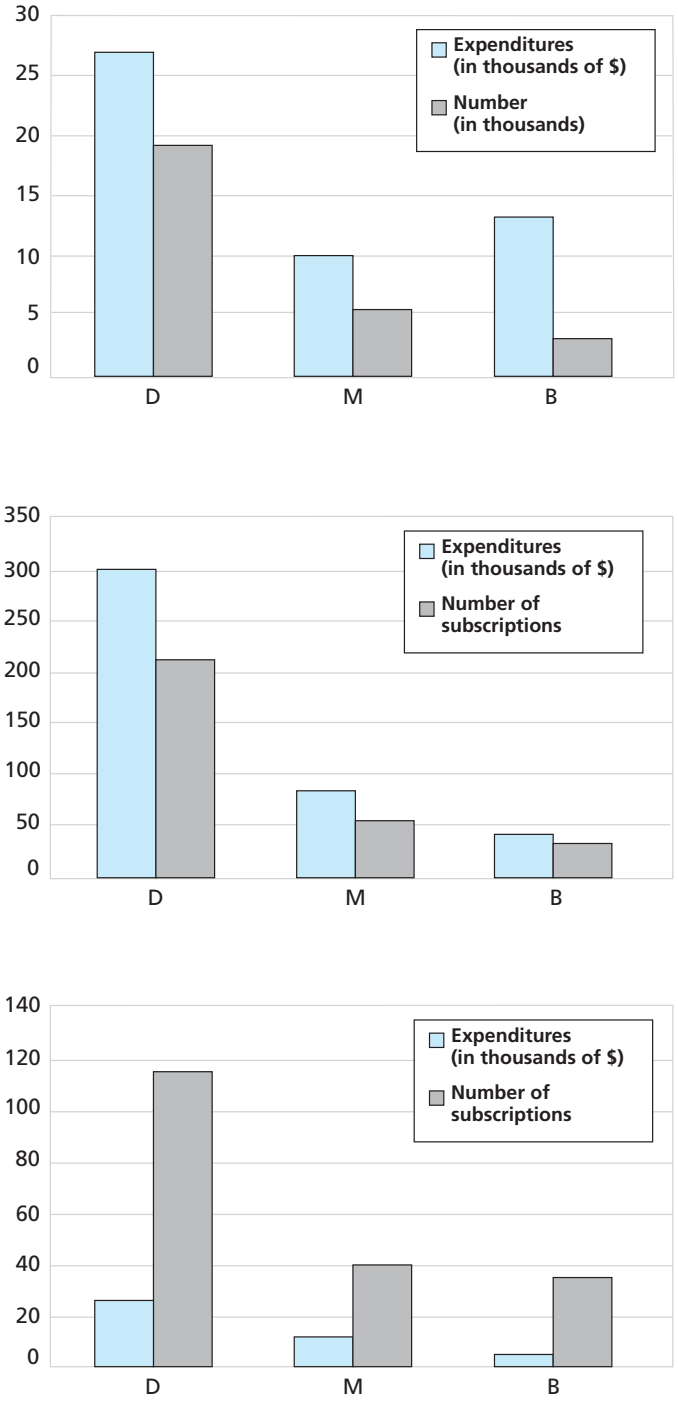

Figure 3. Top: Chemistry books and monograph holdings. Middle: Print chemistry journal subscriptions. Bottom: Electronic chemistry journal subscriptions.

For many of the results, the average deviations in values are larger than the mean values, even when broken down by degree type. Nevertheless, some interesting patterns emerge from consideration of the responses. Overall, 83% of the institutions responding indicated that they employ a librarian with the expertise necessary to assist faculty and students in gaining access to the chemical literature. Such an individual was more likely to exist on the staff of D schools (95%) than either M or B schools (76% and 80%, respectively).

Chemical information is very expensive: Chemistry consumes on average about 10% of the average college or university information services budget excluding salaries (see Figure 2). This percentage is a bit higher at D schools (11%) than at B schools (7%.)

The average chemistry book/monograph holdings of libraries (Figure 3, top) also vary tremendously by school size, ranging from almost 3,000 at B schools to over 19,000 at D schools. Despite this large discrepancy in holdings, B schools spend almost half as much for books and monographs as do D schools. However, M institutions appear to be falling behind in these categories as well, holding only about twice as many books and monographs as B institutions but currently spending less than B and D schools on such acquisitions.

Subscriptions to and expenditures for print chemistry journals (Figure 3, middle) generally scale with the average chemistry user numbers noted above. B schools subscribe to approximately 29 print journals on average; M schools have 52 print subscriptions and D institutions 211. The expenditures for these journals follow the subscription numbers and range from $39,400 for B institutions to over $300,000 for D institutions.

Subscriptions to electronic chemistry journals (Figure 3, bottom) are becoming increasingly popular, although subscriptions at D institutions (115) far exceed those at B and M institutions (33 and 41, respectively). At this time, expenditures for these electronic subscriptions average less than one-tenth those for print subscriptions even though the number of electronic subscriptions is equal to or a significant fraction of the number of print subscriptions. This result probably reflects print and electronic subscriptions for the same journal in many cases. Based on this information, no predictions about the costs of electronic subscriptions can be made.

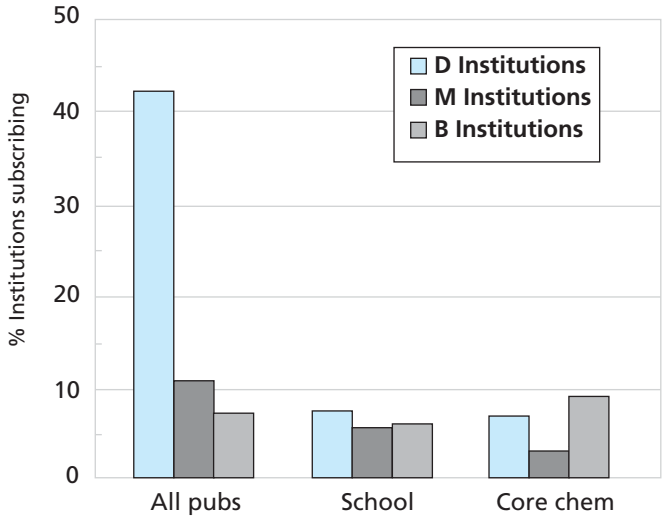

Figure 4. Subscriptions to the three most popular ACS Journals Packages.

Subscriptions to journals published by ACS are somewhat less variable than total subscriptions. Out of a total of 28 ACS journals in fall 2000, on average, B institutions subscribe to 14 journals, M institutions to 16, and D institutions to 26. Despite the similarity in individual ACS journal subscription numbers between institutions of different size, subscriptions to ACS journals through a variety of available packages is highly variable (Figure 4). Those institutions that subscribe to no ACS journals package represent 67% of B institutions, 68% of M institutions, but only 31% of D institutions responding. 42% of D institutions subscribe to the ACS All Publications package (all 28 of the ACS publications in fall 2000), whereas only 10% and 7% of M and B institutions, respectively, do. Also noteworthy is that only 6% of B institutions, 5% of M institutions, and 7% of D institutions subscribe to the ACS School package (17 ACS publications, of which 14 are on the CPT journal list). This is significant particularly for B and M institutions, since this package was presumably developed to allow such institutions to meet ACS guidelines for approved programs for journal subscriptions. The ACS Core Chemistry package (10 ACS journals on the CPT journal list) is more popular at B institutions, with 9% subscribing. In contrast, only 3% of M institutions and 6% of D institutions subscribe to this package. The remaining ACS journals packages have very low numbers of subscriptions among those institutions responding to this survey.

It should be noted that many schools report consortial arrangements to widen their access to the chemical literature. An increasing number of state and regional consortia that negotiate access to journals for member schools were cited. This approach would appear to be a very desirable way to keep the costs for chemical information at reasonable levels.

Chemical Abstracts is central to accessing chemical information. 98% of institutions report that they subscribed to the print version of *Chemical Abstracts* at some time; indeed, this was once a requirement for ACS approval of an undergraduate program. As electronic access to *Chemical Abstracts* has become more common, however, institutions are dropping their print subscriptions, as shown by the data in Figure 5. Today, only 53% of institutions retain print subscriptions to *Chemical Abstracts*. This trend occurred first in the B schools, leading to only 35% retaining their print subscriptions today, but it has also begun to be manifest in the D schools as well where currently only 86% have print subscriptions. Of those schools with print *Chemical Abstracts* subscriptions, 72% subscribe to indices.

Clearly gone are the days when a student could stare in awe at an entire library wall of *Chemical Abstracts* and ponder the enormity of chemical knowledge. Instead, now 91% of institutions report some form of electronic access to *Chemical Abstracts*, either through STN International, Dialog[1], or

[1]The ACS guidelines for an approved program explicitly do not accept access to *Chemical Abstracts* through Dialog as adequate for program approval, since full-text abstracts are not provided.

SciFinder Scholar. This number is nearly the same at all institutions regardless of highest degree granted. Although the ready availability of electronic searching of *Chemical Abstracts* might be expected to improve and enhance student use of this valuable database, in fact, the results of the survey suggest the opposite. Schools that use STN or Dialog as portals to *Chemical Abstracts* were asked to report how much was spent and how many searches were made during the 1999–2000 academic year. Although the deviations were considerably larger than the means, and the range in values reported was from 0 to several thousand dollars at individual institutions, on average, schools reported only 165 searches per year *for all users*. By school type, the results indicate on average 126 searches at B schools, 198 at M schools, and 191 at D schools. Although the exact number of searches made by undergraduates is not explicitly available in these values, by any measure, undergraduates are not frequently searching *Chemical Abstracts* as part of their undergraduate education. One cause of this limited use may be restrictive access to *Chemical Abstracts* through STN. Indeed, significant numbers of institutions, especially B schools, report that student searches are either limited to after 5 p.m. and/or require a librarian, faculty or staff member to perform, assist with, or mediate the search. In extreme cases, some institutions report that electronic searches of *Chemical Abstracts* are not available to undergraduates at all.

SciFinder Scholar is a new and quite extraordinary product, although some institutions view its cost as prohibitive. Nonetheless, *SciFinder* is slowly making inroads into the academic market; the number of academic subscriptions is increasing almost daily. As of fall 2000, 75 schools reported subscription to *SciFinder Scholar*. 58 schools provided information about their 1999–2000 subscriptions. Of these, 49 are D, 3 M, and 6 B schools (the last mostly by way of consortial agreements). This represents 38% of the D schools, 4% of M, and 3% of B. Structure searching is an option: 66% of the schools reported subscriptions that offer this option.

As of fall 2000, 53% of schools surveyed reported no plans to subscribe to *SciFinder Scholar*. Broken down by type, this is 20% of D, 60% of M, and 81% of B institutions. When asked why, an overwhelming majority of respondents (77%) cited cost as a major reason; 29% noted too few seats for the subscription price. Appendix 3 summarizes these responses. Although 37% of those responding to this question reported (as one of three possible ranked responses) satisfaction with their current arrangements for electronic access to *Chemical Abstracts*, 32% were concerned by the apparent unavailability of consortial subscriptions, and 32% did not like that the product is not Web based and must be installed on each computer. This concern is one that was often raised by library staff.

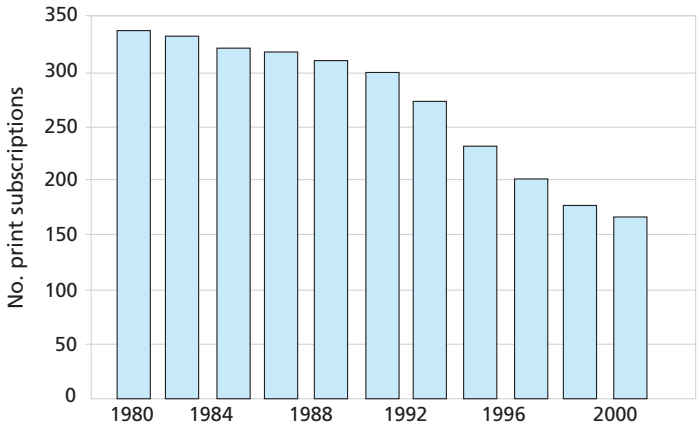

Figure 5. Print subscriptions to *Chemical Abstracts* since 1980.

In the months since this survey was undertaken, major changes in pricing policies for *SciFinder Scholar* have been introduced by Chemical Abstracts Service in an attempt to address concerns about subscription costs, particularly for B and M institutions. As a result, a significant number of institutions that did not plan to subscribe to *SciFinder Scholar* at the time of our survey have subscribed. As of August 2001, 199 universities and colleges in the United States (consisting of ACS-approved and not approved programs) have subscribed; this number includes 141 D, 18 M, and 40 B institutions. Even assuming that all of these programs are ACS-approved, these numbers represent approximately 74% of D institutions but only 14% of M institutions and 13% of B institutions. Thus, a clear distinction is developing in the ability of D institutions compared with other institutions (i.e., B and M) to provide this outstanding, state-of-the-art capability for their students, faculty, and staff. Whether all or even a majority of ACS-approved chemistry programs will eventually be able to incorporate *SciFinder Scholar* as a gateway to *Chemical Abstracts* is uncertain. CPT will continue to monitor this situation closely in the coming years.

Summary

The results of this survey uncovered several disturbing trends in access to and use of chemical information in undergraduate chemistry education. First, it is clear that existing academic library budgets are stretched to their maxima with little room for further increases in cost. Indeed, budget reductions or caps at many institutions have resulted in cuts in library purchases and journal subscriptions that will no doubt have a deleterious effect on education in chemistry.

Second, the results suggest that chemistry undergraduates may not be receiving adequate experience in using the chemical literature. CPT is considering ways to better assess the use of the chemical literature in undergraduate curricula to ascertain whether changes in the guidelines for approved programs might be advised. CPT plans to continue its discussion of these important issues with the chemistry community.

Finally, a profound "digital divide" appears to be developing in the ability of institutions to provide modern electronic chemical information to their students. Despite the tremendous power of new electronic means of accessing the chemical literature and searching *Chemical Abstracts*, the costs for such products are simply beyond the means of a significant number of academic institutions. This digital divide should be of considerable concern to ACS specifically and the chemistry community as a whole. Collectively, we must find ways to narrow this divide or suffer the resulting consequences on the quality of education of future chemists. ◆

Appendix 1. American Chemical Society Committee on Professional Training Library Survey Results, Fall 2000

A. INSTITUTION INFORMATION

1. What is the highest degree in chemistry offered by your institution? (416 respondents)

		Total (%)	B (%)	M (%)	D (%)
a.	BA/BS	51	100		
b.	MA/MS	18		100	
c.	PhD	31			100

2. What is the total undergraduate enrollment at your institution? (413 respondents)

		Total (%)	B (%)	M (%)	D (%)
a.	<1,500	11.4	20.1	2.6	2.4
b.	1,500–3,500	24.3	41.6	5.2	7.1
c.	3,501–12,000	37.8	32.5	59.7	32.3
d.	12,001–25,000	21.9	5.7	29.9	40.9
e.	>25,000	5.8	0.0	2.6	17.3

3. What was the total undergraduate course enrollment in all chemistry courses in the spring 2000 term?

		Total (%)	B (%)	M (%)	D (%)
a.	<100	3.5	6.4	1.4	0.0
b.	100–500	43.3	70.4	23.9	9.8
c.	501–1,500	33.0	21.2	59.2	37.8
d.	1,501–2,500	10.1	1.0	14.1	22.8
e.	>2,500	10.1	1.0	1.41	30.1

4. What is the typical annual number of BA/BS chemistry graduates at your institution?

		Total (%)	B (%)	M (%)	D (%)
a.	<10	34.3	51.7	26.0	10.9
b.	10–20	40.1	40.2	42.9	38.3
c.	21–50	20.1	7.7	27.3	35.9
d.	51–100	3.9	0.5	2.6	10.2
e.	>100	1.7	0.0	1.3	4.7

5. What is the total graduate student enrollment at your institution?

		Total (%)	B (%)	M (%)	D (%)
a.	Zero	24.6	48.5	1.4	0.0
b.	1–500	26.6	31.5	41.9	9.6
c.	501–2,500	24.6	17.0	35.1	30.4
d.	2,501–5,000	14.0	2.5	17.6	30.4
e.	>5,000	10.3	0.0	4.1	29.6

6. What is the total number of chemistry graduate students at your institution?

		Total (%)	B (%)	M (%)	D (%)
a.	Zero	50.4	98.1	3.9	0.0
b.	1–25	17.6	1.4	75.3	9.4
c.	26–80	17.8	0.0	19.5	46.1
d.	81–200	10.8	0.0	1.3	34.4
e.	>200	3.4	0.0	0.0	10.2

7. What is the total number of chemistry postdoctoral researchers?

		Total (%)	B (%)	M (%)	D (%)
a.	Zero	61.4	93.8	70.1	2.4
b.	1–10	21.0	6.2	29.9	40.4
c.	11–50	12.6	0.0	0.0	40.9
d.	51–100	4.6	0.0	0.0	15.0
e.	>100	0.5	0.0	0.0	1.6

8. What is the total number of chemistry faculty plus academic staff? (Include individuals such as instructors, laboratory coordinators, lecturers, adjunct and part-time faculty, and research staff, but do not include graduate teaching assistants.)

		Total (%)	B (%)	M (%)	D (%)
a.	<5	3.4	5.2	3.9	0.0
b.	5–10	32.7	59.7	13.0	0.0
c.	11–20	33.9	31.8	61.0	21.1
d.	21–50	25.5	3.3	20.8	64.8
e.	>50	4.6	0.0	1.3	14.1

9. Check all other academic departments/units at your institution that require routine access to chemical information.

	Total (n)	B (n)	M (n)	D (n)
_____ Chemical Engineering	112	14	16	82
_____ Marine Science	43	11	8	24
_____ Biochemistry	259	102	41	116
_____ Forensic Science	30	11	8	11
_____ Medicinal/Pharmaceutical Chemistry	82	9	10	63
_____ Materials Science	107	18	9	80
_____ Clinical Chemistry	41	10	10	21
_____ Environmental Science	227	98	41	88
_____ Polymer Science	68	8	10	50
_____ Physics	295	135	51	109
_____ Food Science	69	14	15	40
_____ Biology	372	181	70	121
_____ Toxicology	60	8	10	42
_____ Geology	193	64	40	89
_____ Other	53	27	6	20

B. IMPACT OF LIBRARY BUDGETS ON CHEMISTRY DEPARTMENT EDUCATIONAL MISSION

1. How would you describe the adequacy of the collective library holdings in chemistry at your institution in terms of allowing your department to meet its educational mission?

		Total (%)	B (%)	M (%)	D (%)
a.	Adequate	49.4	55.8	39.0	45.2
b.	Marginally adequate	36.3	36.1	41.6	33.3
c.	Somewhat inadequate	12.9	7.2	18.2	19.1
d.	Severely inadequate	1.5	1.0	1.3	2.4

2. In the past five years, have expenditures for library holdings in chemistry

		Total (%)	B (%)	M (%)	D (%)
a.	Increased (go to question 4)	30.3	28.2	16.9	42.1
b.	Remained about the same (go to question 4)	49.3	55.5	58.4	33.3
c.	Decreased	20.4	16.3	24.7	24.6

3. How would you characterize the impact of reductions in library purchases/subscriptions in chemistry in the past five years on your department's educational mission?

		Total (%)	B (%)	M (%)	D (%)
a.	Severe (very major negative impact)	1.8	2.5	0.0	1.8
b.	Major (significant major impact)	10.7	5.1	12.1	17.5
c.	Substantial (noticeable negative impact)	36.1	25.3	51.5	42.1
d.	Minimal (little negative impact)	43.2	53.2	36.4	33.3
e.	No significant impact	8.3	13.9	0.0	5.3

4. If you anticipate reductions in library purchases/subscriptions in chemistry during the next five years, do you expect them to be

		Total (%)	B (%)	M (%)	D(%)
a.	Greater than past five years	8.2	7.1	7.8	10.3
b.	About the same as past five years	19.6	12.4	24.7	28.6
c.	Fewer than past five years	7.3	5.7	13.0	6.4
d.	Cannot reliably predict anticipated reductions	30.0	29.0	31.2	31.0
e.	Do not anticipate any reductions	34.9	45.7	23.4	23.8

5. What impact on your department's educational mission would further reductions in library chemistry purchases/expenditures in chemistry have?

		Total (%)	B (%)	M (%)	D (%)
a.	Severe (very major negative impact)	9.9	5.3	7.8	18.5
b.	Major (significant major impact)	25.7	24.5	20.8	30.3
c.	Substantial (noticeable negative impact)	48.7	47.9	58.4	43.7
d.	Minimal (little negative impact)	13.3	19.1	10.4	5.9
e.	No significant impact	2.6	3.2	2.6	1.7

6. How would you describe the accessibility of your institution's electronic journal subscriptions to your department's undergraduates?

		Total (%)	B (%)	M (%)	D (%)
a.	Excellent	26.8	25.5	13.2	37.3
b.	Good	29.8	27.9	39.5	27.0
c.	Fair	20.4	16.7	29.0	21.4
d.	Poor	12.8	14.2	10.5	11.9
e.	Not applicable	10.1	15.7	7.9	2.4

7. How could the access of undergraduates to electronic journal subscriptions be improved? See text.

8. How would you describe the accessibility to your institution's electronic subscriptions to *Chemical Abstracts* by your department's undergraduates?

		Total (%)	B (%)	M (%)	D (%)
a.	Excellent	16.7	15.4	9.1	23.4
b.	Good	34.8	40.8	31.2	27.4
c.	Fair	24.9	24.4	27.3	24.2
d.	Poor	13.9	10.4	18.2	16.9
e.	Not applicable	9.7	8.0	14.3	8.1

9. How could the access of undergraduates to electronic subscriptions to *Chemical Abstracts* be improved? See text.

C. LIBRARY CHEMISTRY HOLDINGS AND BUDGETS

(This section should be completed by a librarian familiar with your chemistry holdings and acquisitions.) Note: 1999–2000 refers to the academic year, not two calendar years.

1. What were your approximate institutional expenditures for all library acquisitions in 1999–2000? (Exclude expenditures in separate libraries associated with professional schools, such as law, medicine, veterinary medicine, and dentistry, and do not include salaries, equipment, or capital costs.)

Total (AVG $)	B ($)	M ($)	D ($)
1,850,000	746,000	1,410,000	4,060,000

2. What were your approximate expenditures for chemical information (books, monographs, journals, periodicals, *Chemical Abstracts*, and other types of chemical information, either hard copy or electronic) for 1999–2000?

Total (AVG $)	B ($)	M ($)	D ($)
169,000	48,400	109,000	416,000

3. What is the total number of chemistry book/monograph holdings in your library?

Total (AVG n)	B (n)	M (n)	D (n)
8,240	2,880	5,360	19,300

4. What were your approximate expenditures for chemistry books/monographs in 1999–2000?

Total (AVG $)	B ($)	M ($)	D ($)
16,500	13,100	9,860	27,000

5. What was the total number of print chemistry journal/periodical subscriptions in your library in 1999–2000?

Total (AVG n)	B (n)	M (n)	D (n)
86.0	28.8	51.5	211

6. What were your approximate expenditures for print chemistry journal/periodical subscriptions in 1999–2000?

Total (AVG $)	B ($)	M ($)	D ($)
124,000	39,400	83,900	302,000

7. What was the total number of electronic chemistry journal/periodical subscriptions in your library in 1999–2000?

Total (AVG n)	B (n)	M (n)	D (n)
58.4	32.7	40.7	115

8. What were your approximate expenditures for electronic chemistry journal/periodical subscriptions in 1999–2000?

Total (AVG $)	B ($)	M ($)	D ($)
10,400	3,520	10,600	25,300

9. How many ACS journals did your institution subscribe to in 1999–2000?

Total (AVG n)	B (n)	M (n)	D (n)
17.5	13.6	15.7	26

10. To which of the following ACS chemistry journal packages does your institution subscribe?

	Total (n)	B (n)	M (n)	D (n)
_____ ACS All Publications	77	15	8	54
_____ ACS School	25	12	4	9
_____ ACS Core Chemistry	28	18	2	8
_____ ACS Organic Chemistry	7	0	3	4
_____ ACS Biochemistry/Biotechnology	6	1	2	3
_____ ACS Polymer & Materials Science	3	0	1	2
_____ ACS Pharmaceuticals	1	0	0	1
_____ ACS Applied Chemistry/Chemical Engineering	2	0	0	2
_____ None	237	141	52	40

11. Has your institution ever subscribed to the print version of *Chemical Abstracts*?

	Total (%)	B (%)	M (%)	D (%)
Yes (go to question 12)	97.7	96.5	98.6	99.1
No (go to question 15)	2.3	3.5	1.4	0.9

12. For what years (inclusive) does your institution have print *Chemical Abstracts*?

(year) _____ to _____ (year or present)

Total (avg yr)	1912	to	1994
B (avg yr)	1915	to	1991
M (avg yr)	1913	to	1995
D (avg yr)	1908	to	1999

13. If you subscribed to the print version of *Chemical Abstracts* in 1999–2000, does your subscription include CA Indices (i.e., a "full subscription" as defined by CAS)?

	Total (%)	B (%)	M (%)	D (%)
Yes	72.1	47.8	66.7	90.2
No	27.9	52.2	33.3	9.8

14. Did your faculty or students have electronic access to *Chemical Abstracts* in 1999–2000?

	Total (%)	B (%)	M (%)	D (%)
Yes (go to question 16)	91.2	90.9	90.0	92.1
No (go to question 19)	8.8	9.1	10.0	7.9

15. What services were used to provide electronic access to *Chemical Abstracts* in 1999–2000? (Circle all that apply.)

	Total (n)	B (n)	M (n)	D (n)
STN International	208	97	37	71
STN Easy	146	94	30	19
Dialog	122	72	23	25
SciFinder Scholar	72	7	4	61
Other (please specify)	42	18	2	18

16. If you used STN or Dialog for electronic access to *Chemical Abstracts*, please answer the following:

a. How much was spent for this service in 1999–2000? $ _____

Total ($)	B ($)	M ($)	D ($)
2,500	775	1,760	2,450

b. How many searches were made? _____

Total (AVG n)	B (n)	M (n)	D (n)
165	126	198	191

c. Which special conditions apply to undergraduates using these services?

	Total (n)	B (n)	M (n)	D (n)
____ None	24	13	4	7
____ Access after 5 p.m. only	195	107	43	42
____ Librarian conducts search	153	63	29	59
____ Faculty member conducts search	78	47	15	16
____ Other (describe) _____	58	30	6	20

d. Do you consider this electronic access adequate? _____

	Total (n)	B (n)	M (n)	D (n)
Yes	168	101	36	27
No	139	58	26	55

17. If you subscribed to *SciFinder Scholar*, please answer the following:

a. How many "seats" (concurrent users) were provided in this subscription? _____

Total (n)	B (n)	M (n)	D (n)
3.9	3.8	1.5	4.0

b. Did this subscription include structure searching? Yes _____ No_____

	Total (n)	B (n)	M (n)	D (n)
Yes	46	6	4	36
No	22	2	0	20

c. Do you consider this electronic access adequate? Yes _____ No_____

	Total (n)	B (n)	M (n)	D (n)
Yes	30	5	3	21
No	36	3	0	33

18. Is your institution planning to subscribe to *SciFinder Scholar*?

	Total (%)	B (%)	M (%)	D (%)
a. Currently subscribe (go to question 21)	23.0	5.8	13.6	56.5
b. In the next six months (go to question 21)	4.6	4.1	6.1	4.6
c. In the next year (go to question 21)	1.4	0.6	1.5	2.8
d. Plan to subscribe, but uncertain when	11.2	8.1	12.1	15.7
e. No plans to subscribe at this time	59.8	81.4	66.7	20.4

19. What are the major reasons why your institution is uncertain about subscribing or is not planning to subscribe to *SciFinder Scholar*?

(List top three in order of priority, 1 = most important reason. Skip this question if you answered a, b, or c in response to question 8.)

AVG priority (1 = highest) (Total n)

__Current arrangements are satisfactory

Total (n)	B (n)	M (n)	D (n)	Cited #1 (n)
1.7 (90)	1.6 (61)	2.0 (19)	1.7 (10)	46

__Unfamiliar with capabilities

Total (n)	B (n)	M (n)	D (n)	
1.6 (87)	1.6 (62)	1.5 (20)	1.6 (5)	53

__Technical capabilities inadequate or inappropriate for our needs

Total (n)	B (n)	M (n)	D (n)	
1.7 (7)	1.8 (5)	1.5 (2)	0 (0)	2

__Inadequate computer capabilities at this institution to support

Total (n)	B (n)	M (n)	D (n)	
2.0 (3)	2.0 (1)	2.0 (2)	0 (0)	0

__Subscription price too high

Total (n)	B (n)	M (n)	D (n)	
1.3 (189)	1.4 (109)	1.3 (42)	1.2 (38)	145

__Number of "seats" too few for subscription price

Total (n)	B (n)	M (n)	D (n)	
2.1 (70)	2.1 (31)	2.4 (16)	2.0 (23)	8

__Not Web-based (requires special software)

Total (n)	B (n)	M (n)	D (n)	
2.2 (77)	2.1 (50)	2.0 (14)	2.5 (13)	17

__Lack of consortial arrangements

Total (n)	B (n)	M (n)	D (n)	
2.5 (78)	2.5 (42)	2.4 (21)	2.5 (15)	5

__Other (please specify). See text.

Total (n)	B (n)	M (n)	D (n)	
1.6 (5)	0 (0)	2.0 (2)	1.3 (3)	2

20. Briefly describe any consortial arrangements in which your institution participates for access to chemical information. See text.

21. Does your institution have a librarian who has the expertise to assist faculty and students in gaining access to the full chemical literature?

	Total (n)	B (n)	M (n)	D (n)
Yes	314	149	53	110
No	63	38	17	6

Appendix 2. Departments other than chemistry using chemical information

Agricultural Science
Agricultural Science and Engineering
Agronomy and Soils
Animal Science
Behavioral Neuroscience
Biochemistry/Molecular Biology
Bioinformatics
Biology/Biological Science
Biomedical Engineering
Biomedical Science and Engineering
Biotechnology
Ceramic Engineering
Chemical Engineering
Civil Engineering
Clinical Chemistry
Composite Engineering
Dairy Science
Earth, Atmospheric, and Planetary Science
Engineering Technology
Environmental Engineering
Environmental Science
Family and Consumer Sciences
Food Science
Forensic Science
Geography
Geology
Geophysical Engineering
Health and Exercise Science
Horticulture
Justice and Law
Marine Sciences
Materials Engineering
Materials Science
Mechanical Engineering
Medical Technology
Medicinal/Pharmaceutical Chemistry
Medicine
Metallurgical Engineering
Microbiology
Mining Engineering
Molecular and Cellular Biology
Molecular Biology
Neuroscience
Nursing
Nursing Engineering
Nutrition
Occupational Safety and Health
Oceanography
Optical Sciences
Paper Science
Petroleum Engineering
Pharmacology
Pharmacy
Physician Assistants Program
Physics
Physiology
Plant Science
Psychology
Pulp and Paper
Soils
Textile Science
Veterinary Science
Wood and Paper Science
Zoology

Appendix 3. Rank of reasons why institutions are uncertain about or not planning to subscribe to *SciFinder Scholar*.

		REASON RANK		
		1	**2**	**3**
Current arrangements for electronic *Chemical Abstracts* access satisfactory	B	34	16	11
	M	8	4	7
	D	4	5	1
Unfamiliar with capabilities	B	37	14	11
	M	13	5	2
	D	3	1	1
Capabilities inadequate or inappropriate for needs of institution	B	1	4	0
	M	1	1	0
	D	0	0	0
Computer capabilities of institution inadequate to support	B	0	1	0
	M	0	2	0
	D	0	0	0
Subscription price too high	B	78	23	8
	M	34	4	4
	D	33	4	1
Number of "seats" too few for price	B	5	17	9
	M	0	10	6
	D	3	17	3
Not Web-based	B	11	21	18
	M	4	6	6
	D	2	2	9
Lack of consortial arrangements	B	3	15	24
	M	1	11	9
	D	1	5	9
Other	B	0	0	0
	M	0	2	0
	D	2	1	0

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