

- Shunk, D. (1990). Goal setting and self-efficacy during self-regulated learning. *Educational Psychologist, 25*, 71-86.
- Stahl, N., Simpson, M., & Hayes, C. (1992). Ten recommendations from research for teaching high-risk college students. *Journal of Developmental Education, 16*(4), 2-10.
- Thomas, J. W., & Rohwer, W. D. (1986). Academic studying: The role of learning strategies. *Educational Psychologist, 21*, 19-41.
- Wilcox, F. K., & Koehler, C. (1996). Supplemental Instruction: Critical thinking and academic assistance. *Metropolitan Universities: An International Forum, 6*(4), 87-99.
- Zimmerman, B. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*, 329-339.

The Physical Environment of Learning Support Centers

William G. White, Jr.
Grambling State University

Abstract

This article reports the findings of a survey of learning support centers (LSC) regarding their facilities, furnishings, and equipment. Directors of 273 LSCs in the United States and Canada were surveyed with a response rate of 32%. The study addresses a number of LSC characteristics: location, prominence of location, exterior and interior qualities, construction and renovation history, furnishings and equipment inventories and selection, and educational adequacy. Findings reveal a number of positive changes in the physical environments of LSCs during the past two decades, but may also reveal some differences between centralized and organizationally or physically decentralized LSCs.

In spring 2001 I was asked to make a presentation on the state of learning support center (LSC) facilities, equipment, and furnishings at the Winter Institute for Learning Assistance Professionals to be held in Tucson in January 2002. Along with three colleagues, I had done some work in the area of LSC facilities a decade earlier. Taking the advice of the famous American architect, Louis Sullivan, that form should follow function, our work began with a survey of the literature in search of all of the various functions, activities, and programs that were taking place in LSCs (White & Schnuth, 1990). Based on those findings regarding program functions and a review of the literature on LSCs and educational facility planning, we described how the planning process for LSC facilities should take place, discussed various design considerations, and presented specifications for various areas within an LSC (White, Kyzar, & Lane, 1990b, 1993, 1994/1990a).

Our work in the early 1990s presented what various authorities and writers thought should be true. It might be helpful to comment briefly on the major findings of that research. The first is probably obvious based on the approach we took: the design, furnishings, and equipment of LSC facilities should be based on the LSC's mission and goals and the functions and activities that take place in the facilities. Second, planning for the LSC facility should be broad based and include not only professional planners (e.g., the project architect, the campus architect and engineer, an educational facility planner)

For further information contact: William White | Grambling State University | P.O. Box 51 GSU | Grambling, LA 71245 | E-mail: whitewg@gram.edu

but also the users of the facilities: the director and professional and support staff. Including a few carefully selected students in the planning process is also desirable. Third, the types of services, programs, and activities that take place in the LSC are usually best served by a facility with an open design and flexible spaces that can be reconfigured with relative ease to accommodate varying group sizes and varying activities, including new, unanticipated services and activities. Regardless of openness and flexibility, LSC facilities must be large enough to accommodate the number of students that need to be served. Even the most carefully designed facilities cannot accommodate unlimited numbers of users. Finally, if the LSC desires to attract students, its facilities should be centrally located, easily accessible, aesthetically pleasing, and comfortable. Attractive and comfortable facilities are the result of carefully controlled thermal environments, adequate lighting, comfortable furnishings, appropriate floor coverings, use of color, and acoustic control. So, that is briefly what should be. To prepare for the presentation at the Winter Institute, I conducted a study that attempted to determine what is.

Method

During the summer of 2001 I developed a questionnaire, and, with the help of a graduate assistant, selected a proportional, random sample of 200 two- and four-year institutions in the United States. However, after thinking about the variety of names used by LSCs, as well as their varied organizational and physical locations on campuses, I feared that many of the questionnaires would never reach the LSC directors for whom they were intended. I opted instead for a purposeful sample that might bring better results. Using the College Reading and Learning Association (CRLA) and Learning Support Centers in Higher Education (LSCHE) Web sites and the membership directory of the National College Learning Center Association (NCLCA), I developed a list of 273 LSC programs in the United States and Canada.

Response Rate

In October I mailed a questionnaire and a postage-paid return envelope to the director of each LSC in the sample. Eighty-seven usable questionnaires were returned, yielding a 32% response rate. Responses were received from program administrators in 31 states and Canadian provinces and from a variety of two- and four-year, public, and private institutions. Follow-up mailings were not attempted because of the prohibitive cost of postage.

The low response rate was probably attributable to several factors. The questionnaire was long and called for a considerable amount of technical information about facilities (e.g., dates of construction and renovation, design process, size, finish surfaces, lighting, thermal environment) and furnishings and equipment (e.g., number, type, selection process). Some LSC directors may not have easy access to some of this basic information about their facilities, equipment, and furnishings, and some do not have a feel for physical or spatial features. Many respondents did not know when the building in which their center was located had been built or last renovated.

Some had difficulty in measuring or estimating square footages and occupant capacities for spaces.

Another factor contributing to the low response rate may have been organizationally decentralized LSCs: which program directors received the questionnaire and were they able or willing to collect the needed information from directors of other learning support services and programs on campus? Even the directors of organizationally centralized but physically decentralized LSCs may have found it too time consuming to gather needed information about multiple sites. The design of the questionnaire also made responses from such program directors difficult. For example, how can the director of a physically decentralized program describe his or her facility as facilitating or inhibiting the accomplishment of the program's mission and goals when the program occupies spaces in two, three, or even four different buildings on campus?

These challenges for directors of organizationally or physically decentralized programs probably explain why the vast majority (84%) of respondents directed programs that were centralized in one location on their respective campuses. It is certainly possible, and probably quite likely, that 84% of all LSCs in the United States and Canada are not centralized. It may also be that centralized LSCs are more likely to have Web sites linked to the CRLA and LSCHE Web sites. Or, it is possible that directors of centralized LSCs tend to be more professionally involved in professional associations such as NCLCA and CRLA. These are interesting questions worthy of further research.

Results for Centralized Learning Support Centers

Because of difficulties encountered by directors of decentralized programs in responding to several items in the questionnaire, the discussion that follows will focus on the findings of the study related to centralized programs. Then I will address briefly the findings for decentralized programs and compare some of the findings of the two groups.

Location of Centers on Campus

It has long been accepted that a prominent location for an LSC is desirable because students can find it more easily. A prominent location might also indicate that the campus culture sees the LSC as an important service. Of the 73 directors of centralized programs, 69% reported that their centers were prominently located. During the last 20 years it seems that LSCs have become much more prominently located on campus: In the late 1970s and early 1980s, there were many published reports of LSCs tending to be located in basements of residence halls and in trailers on the edge of campuses. That situation has apparently changed for the better.

Another long-standing concern about the location of LSCs is their centrality on campus, because centrality of location invites greater student use. More

than two thirds (71%) of centralized LSCs in this study were centrally located. An even larger majority (85%) of centralized LSCs were reported as being easily found by students.

The Physical Environment

Once students find the LSC, what will the physical environment be like? First, only a few LSCs (7%) in this study are the exclusive occupants of the buildings in which they are housed; most are housed in buildings with a variety of other academic or student affairs units. A very large majority (90.4%) of the centralized LSCs are described as being housed in buildings with exteriors that are attractive and inviting. Similarly impressive majorities described the LSCs' interiors as attractive (85%), comfortable (96%), and encouraging student use (91.8%).

Open, flexible designs for LSCs have been advocated for more than 20 years. A centralized center that houses a number of varied activities can be better served by open, flexible spaces. Apparently, as new LSC facilities have been built or existing facilities have been renovated, this design feature has been incorporated. An impressive majority (88%) of centralized LSCs were reported to have large, open, flexible spaces.

The age of centralized LSC facilities and the purposes for which those facilities were originally designed were surprising but welcome. The average age of the facilities was only 8.7 years ($n = 32$), and more than three fourths of them (77% of 35 respondents) had been originally designed for the LSC and had LSC staff involved in the planning process. These findings must be viewed cautiously because of the low response rates on some of these items: fewer than half of the directors responded to them. Only 34 of the respondents reported the number of years since their centers had major renovations. The average was only 5.5 years. The seemingly low response rate on this item may not be a cause for concern because many facilities have probably never had major renovations. It is encouraging to learn that in most cases (93% of 43 respondents) the renovations were done specifically for the LSC, and that in 84% ($n = 43$) of the renovations professional staff participated in planning for those renovations.

Survey participants were asked for a great deal of information about the characteristics of the spaces their LSCs occupy—probably too much information. Many did not respond or did so in ways that made calculation of the results quite difficult. In terms of finished surfaces, a large majority of those responding reported that their spaces had floors that were carpeted, walls made of dry-wall, and ceilings covered with acoustic tiles. A large majority also reported satisfactory environmental conditions. Electrical supply and lighting problems were infrequently reported. There were a number of reports, however, of problems with thermal and acoustic conditions in some areas of the LSCs. These environmental conditions are important; students who are too hot or too cold and who are distracted by noise find it more difficult to concentrate on learning.

Furnishings and Equipment

LSC personnel have often reported that they inherit furnishings and equipment that were purchased for use by some other unit on campus and that often do not really serve the needs of the center. Survey respondents provided information about whether furnishings and equipment were purchased specifically for the LSC and whether LSC staff participated in the selection of those items. The results are presented in Table 1. A number of directors did not respond to this section of the questionnaire or to certain items in the section. In some cases they indicated they did not know the answers to the questions.

Except for student desks in those few cases where classroom furnishings were reported, in a majority of the LSCs furnishings were purchased

Table 1
Furnishings and Equipment Purchased for Centralized LSCs and LSC Staff Participation in Selection (n = 73)

Type	Purchased for LSC		LSC Staff Participated	
	n	%	n	%
Furnishings				
Bookcases, shelving, storage units	49	61.2	49	61.2
Carrels	18	77.8	18	72.2
Chairs	63	76.2	64	68.8
Commons/lounge furniture	12	83.3	12	75
Office furniture, file cabinets	58	60.3	58	55.2
Student desks	6	16.7	6	16.7
Tables, computer tables	61	68.9	61	65.6
Equipment				
AV	38	92.1	38	89.5
Commons/lounge equipments	14	100	14	100
Computer equipment: PC	62	75.8	60	63.3
Computer equipment: Mac	15	67.7	15	60
Photocopier	26	84.6	26	69.2

specifically for them and LSC staff were involved in the selection process. Institutional practices such as standardization of furnishings, public bid laws, state contracts, and bookstore and purchasing department monopolies make this a complicated issue, especially in public institutions. In some cases departments have few choices.

In most of the cases reported, equipment was purchased specifically for the LSC with staff involvement in the selection process. However, for some important items, staff did not always participate in the selection of the items purchased specifically for the LSC. For example, 48 respondents reported that chairs were purchased for the LSC, but only 44 reported that LSC staff participated in the selection process. The most troubling aspect of equipment selection concerns computer equipment. In at least a quarter of the cases, computer equipment was not purchased specifically for the LSC, and in a third or more of the cases it was selected without LSC staff involvement. It is unfortunate that learning assistance staff members so often are not involved in selecting the most important learning technology in the LSC.

Educational Adequacy

The survey instrument asked for information about the size and student capacities of the various spaces or areas in the LSCs. Many respondents failed to provide this information or provided information of questionable accuracy. Most directors did not have floor plans drawn to scale at their disposal. After examining the data, I came to the conclusion that the specifics of size and capacity are not really important. What is important is whether or not the spaces are adequate for the number of students served and whether the spaces contribute to the accomplishment of the LSC's mission.

Nearly two thirds (63%) of centralized LSCs were reported as adequate for present usage, and 6% were deemed adequate for both present and future usage. Almost one third (32%) were reported as inadequate for present usage. Space—or rather the lack of it—is clearly a problem for many LSCs, and with only 6% being adequate for anticipated future usage, the situation could become worse.

The degree to which an LSC facility contributes to or facilitates the accomplishment of the LSC's mission and goals is, perhaps, the most important measure of adequacy. More than three quarters (78%) of the directors of centralized centers reported that their facilities contributed to accomplishing program mission and goals. Only 7% of the centers were reported to actually inhibit the accomplishment of mission and goals; 15% were reported to neither facilitate nor inhibit their accomplishment.

Results for Decentralized Learning Support Centers

As noted earlier, only 14 of the 87 respondents in this study reported that their LSCs were physically, and perhaps organizationally, decentralized. It was also acknowledged that many of the questionnaire items were difficult for those respondents to answer, and the data they provided proved difficult

to analyze. So, with a caveat empor, I will briefly compare responses for centralized and decentralized LSCs, spending a bit more time on a few findings that might be a cause for concern.

Location

About the same percentage of decentralized and centralized LSCs were reported to be prominently located. Decentralized LSC sites are often found in major academic buildings adjacent to academic departments or in a student center or campus library. The reported prominence of decentralized LSC facilities may be open to some interpretation. It may be that respondents, when asked to indicate if the LSC was or was not prominently located, may have concluded that if one or more of the sites were prominent they should answer that the LSC was prominently located even though some of the sites might not have been.

Although more than two thirds of decentralized centers were reported to be prominently located, only 43% of 14 respondents reported that all of their facilities were centrally located, considerably fewer than the 71% of 73 centralized centers. This item was difficult for directors of physically decentralized centers to answer. The fact that half of them reported at least one of their facilities to be located on the periphery of the campus is probably not cause for concern in light that more than two thirds of them regarded their centers as being prominently located. That conclusion is reinforced by the fact that 71% of directors of 14 decentralized LSCs reported that all of their facilities were easy for students to find. However, even more (85%) of the 73 directors of centralized centers said their facilities were easily found by students. It would be expected that a single, centralized LSC would be easier to find than multiple sites where decentralized LSC services are provided. The concern is that students who have difficulty finding the location of a center may well give up and go without the academic support services they need.

Physical Environment

Although more than 90% of directors of centralized LSCs characterized the exteriors of their facilities as attractive and inviting, only 57% of directors of decentralized centers described all of their facilities in that way. Not surprisingly, more than one third of decentralized LSCs were described as occupying some buildings that were attractive and inviting and some that were not.

Although most respondents described their facilities as attractive (80%), comfortable (92%) and encouraging student use (85%), centralized centers were more often described that way, especially in terms of attractiveness and encouraging use. The findings for the decentralized centers are probably better than they appear when one considers that substantial majorities of those directors said that all of their facilities had interiors that were attractive (57%), were comfortable (79%) and encouraged use (57%). In some cases it may have been only one of the facilities used by their centers that was unattractive or uncomfortable or that did not encourage use. In any case,

the LSC facilities would seem to be significantly improved over those often reported and complained about 20 to 30 years ago.

A comparison of the openness of the interior design of centralized and decentralized facilities is also problematic. Substantially fewer directors of decentralized centers (i.e., 64%, as contrasted with 88% of centralized LSCs) could report that all of their facilities had large open, flexible spaces, but it would be expected that such would be the case. Decentralized LSCs often have multiple sites with fewer activities or services per site, many of which can be accommodated in smaller, less flexible spaces. Centralized programs, on the other hand, need a single space that is large, open and flexible.

The differences in interior space arrangements were apparently related to the age of the facilities occupied by LSCs in this study and the original purposes for which the facilities were built or renovated. In responding to these questions, directors of decentralized LSCs were able to report information for each facility occupied by their centers. The differences reported between centralized and decentralized centers were unexpected. The mean age of buildings housing centralized LSCs was 8.7 years compared to 22.4 years for decentralized centers. More than three quarters of the centralized LSCs occupied spaces that originally had been designed for them with LSC staff participation. The same could be said of less than one quarter of the decentralized LSC facilities.

Decentralized LSCs fared considerably better in regard to renovated facilities but still lagged far behind centralized LSCs. Of those facilities that had been renovated, centralized ones had been done an average of 5.5 years before the survey compared to 9.9 years for decentralized facilities. The overwhelming majority (93%; $n = 43$) of centralized LSC facilities that had been renovated had been renovated expressly for the LSC and 84% ($n = 43$) had involvement of LSC staff in the planning process. The same was true for less than two-thirds (62%; $n = 21$) of the decentralized facilities. There appears to be a relationship among exterior aesthetics, interior design and aesthetics, building age, time since the last renovation, and involvement of LSC staff in planning new buildings and renovations.

Furnishings and Equipment

There were no major differences between centralized and decentralized LSCs in terms of whether furnishings and equipment had been purchased specifically for them and whether LSC staff had been involved in selecting those items. Similar to 63% of their centralized counterparts, only 54% of directors of decentralized LSCs reported that staff members involved in selection of personal computers for their centers. Staff participated in selecting tables and computer tables or work stations in fewer than half of the decentralized LSCs.

As seen in Table 2, there appeared to be major differences between centralized and decentralized LSCs in terms of adequacy for the number of

students served. Directors of decentralized centers were again faced with the difficulty of selecting a single description of the adequacy of two or more facilities. Nevertheless, only 21% of respondents described decentralized centers as adequate for present and future usage compared to 69% of

Table 2
Characteristics of Surveyed LSCs

	Centralized $n = 73$		Decentralized $n = 14$		Total $N = 87$	
	No.	%	No.	%	No.	%
Prominence						
Prominent	50	68.5	11	78.6	61	70.1
Not prominent	23	31.5	3	21.4	26	29.9
Centrality						
Center of campus	52	71.2	6	42.8	58	66.7
Away from center	15	20.5	1	7.1	16	18.4
Periphery	6	8.2	7	50	13	14.9
Easy to find	62	84.9	10	71.4	72	82.8
Difficult to find	11	15.1	4	28.6	15	17.2
Exterior Aesthetics						
Attractive and inviting	66	90.4	8	57.1	74	85
Some attractive and inviting / some not	NA	NA	5	35.7	5	5.7
Unattractive and uninviting	7	9.6	1	7.1	8	9.2
Interior Aesthetics						
Attractive	62	84.9	8	57.1	70	79.5
Comfortable	70	95.9	11	78.6	81	92
Encourages use	67	91.8	8	57.1	75	85.2
Large, open, flexible space(s)	64	87.7	9	64.3	73	83.9
Smaller, inflexible space(s)	9	12.3	5	35.7	14	16.1
Adequacy						
Inadequate for present usage	23	31.5	11	78.6	34	39.1
Adequate for present usage	46	63	2	14.3	48	55.2
Adequate for present and future use	4	5.5	1	7.1	5	5.7
Facilitation of Program Missions and Goals						
Facilitates	57	78.1	3	21.4	60	69
Neither facilitates nor inhibits	11	15.1	4	28.6	15	17.2
Inhibits	5	6.8	7	50.5	12	13.8

centralized facilities. In any case, lack of space is a problem for many LSCs currently and may grow worse in the future.

Educational Adequacy

On the important measure of how well the LSC facilitates the accomplishment of the mission and goals of the program, responses were markedly different for centralized and decentralized centers (see Table 2). Fewer than one fourth of the directors of decentralized centers—compared to more than three fourths of directors of centralized programs—said their facilities contributed to accomplishing the mission and goals. Even more alarming was that 50% of the directors described one or more of their facilities as actually inhibiting mission and goal accomplishment. Even allowing for problems in capturing these data in the survey instrument, these findings suggest that many of the facilities occupied by physically decentralized LSCs are fundamentally inadequate. To borrow the economic concept of negative growth, we could describe such facilities as *negatively adequate*: they hurt the programs they house.

Conclusions

LSC facilities have improved over the past two decades. Taken as a whole, facilities in this study were reported by their directors to be prominently located near the center of campus and were easily located by students. Building exteriors were considered attractive and inviting; interiors generally were perceived to be attractive and comfortable, encouraged use, and were characterized as open and flexible. Buildings housing LSCs were reasonably new, and those that had been renovated had been done recently. In most cases equipment and furnishings had been purchased specifically for the LSC and with the participation of LSC staff. Most facilities were reported as adequate for present usage and as contributing to the accomplishment of program mission and goals. However, there appeared to be substantial differences between the facilities of centralized and physically decentralized LSCs in terms of interior design attractiveness, comfort and encouragement of use; adequacy; and the degree to which they facilitate the accomplishment of the centers' missions and goals. These are important areas worthy of more serious study.

References

- White, W. G., Jr., Kyzar, B., & Lane, K. E. (1994/1990a). College learning assistance center design considerations. In M. Maxwell (Ed.), *From access to success: A book of readings on college developmental education and learning assistance programs* (pp. 63-68). Clearwater, FL: H&H. Reprinted from *The Educational Facility Planner*, 28(4), 22-26.
- White, W. G., Jr., Kyzar, B., & Lane, K. E. (1990b). College learning assistance centers: Spaces for learning. In R. M. Hashway (Ed.), *Handbook of developmental education* (pp. 179-195). New York: Praeger.

White, W. G., Jr., Kyzar, B., & Lane, K. E. (1993). Planning the learning center facility. In P. A. Malinowski (Ed.), *Perspectives on practice in developmental education* (pp. 100-103). Canandaigua, NY: New York College Learning Skills Association. Clearwater, FL: H&H.

White, W. G., Jr., & Schnuth, M. L. (1990). College learning assistance centers: Places for learning. In R. M. Hashway (Ed.), *Handbook of developmental education* (pp. 155-177). New York: Praeger.

This research was funded in part by a grant from the Grambling State University Professional Development Program, a Title III activity.