CHAPTER 4
The Cost of Distributing Analog Images by University Slide Libraries

The slide library, or analog model, is an important comparative case for the MESL Project. Historically, and currently, slide libraries have been a primary method for the mass distribution of cultural heritage information to the educational community. This chapter discusses the cost centers of the slide libraries. A separate chapter, **The MESL Experience versus Slide Libraries: Comparison and Analysis**, compares these cost centers to their digital equivalents.

About the Slide Libraries and the Survey

We administered a survey to six slide librarians at five universities in order to gather data on the costs of running a slide library. The survey included questions about standard library procedure, and asked for estimates of the number, time, and cost of producing new images and cataloging them, as well as log data on actual usage. The log data is documented in the chapter entitled **The Patterns of Slide Library Circulation: A Study**. Our survey can be found in **Appendix 4A**. Follow-up questions to clarify and add more information for this report were asked via email correspondence.

The size of the slide collections in our study range from 100,000 to approximately 520,000 slides. The average number of slides circulated in a month varies from 2,500 to as many as 10,000 slides. The rate of circulation does not seem to be linked to the size of the overall collection, as smaller libraries often show greater circulation numbers and users per month. There is great variety within the content of the slide collections. In addition to classic works and pictures of museum pieces, slide libraries also contain snapshots of public sculpture, architectural and archeological representations and drawings, contextual and cultural images (including advertisements), and local works by students, faculty, and community artists. (See Eileen Fry's study in the Fall 1998 issue of the VRA Bulletin.)

While six libraries does not constitute a comprehensive study, we believe that these libraries provide a good overview of the costs for slide libraries of varying sizes. They also provide insight into the details of running a slide library, and the duties performed during slide acquisition/creation, organization, and maintenance.

Table 1, **Library Profiles**, summarizes some of the profile information about each library, which will be consistently numbered 1–6 in this report.

Library	Total Slides	Slides Acquired per Year*	Visitors per Month	Slides Re-filed per Month (Average)
1	220,000	10,956	118	6,280
2	100,000	2,800	37	4,000
3	295,000	5,603	124	3,600
4	200,000	3,912	108	10,000
5	366,000	8,856	156	2,620
6	520,000	7,000	208	3,376

*Replacement slides represent 1—2% of new acquisitions.

Table 1—Library Profiles

Libraries 1, 3, and 5 allow undergraduate students to check out slides for a day or overnight. Libraries 2 and 4 do not allow undergraduate students to use the library or check out slides, but graduate students may check out slides for a 24-hour (library 2) or 48-hour (library 4) period. Library 6 allows undergraduate and graduate students to check out slides for seminar presentation only, and the undergraduates must have advance permission from an instructor.

Staffing in the slide library generally consists of one curator, a curatorial assistant, and student assistants or interns. The larger collections might have an additional curator or two. A few of the libraries have part-time photographers, while library 5 has a full time photographer.

In the surveys, each library reported two or three core departments served, including Art History, Architecture History, and Architecture (Interior and Landscape); other core departments included Fine and Applied Arts, Ancient History and Mediterranean Archeology, and Classics. The slide libraries also occasionally served faculty or scholars from other departments such as Theater, Journalism, Romance Languages, History, English, Classics, Anthropology, Italian Studies, and East Asian Studies.

The Cost Centers

The work processes for analog slide libraries have somewhat parallel procedures matching the cost centers for a digital project like MESL. The cost centers we focused on were:

- *Acquisition*—purchasing or producing slides

- *Cataloging*—gathering data, entering data, and filing a slide

- *Maintenance*—re-filing, security, slide replacement, and slide storage

An understanding of these cost centers helps to provide a direct comparison to the digital distribution system evaluated by the UC Berkeley Mellon study. Other costs, such as the physical library space, furniture, computers, and other infrastructure costs, which are necessities of a slide library, are not addressed in this study.

Slide Acquisition

Chart 1: Types of Slide Acquisition
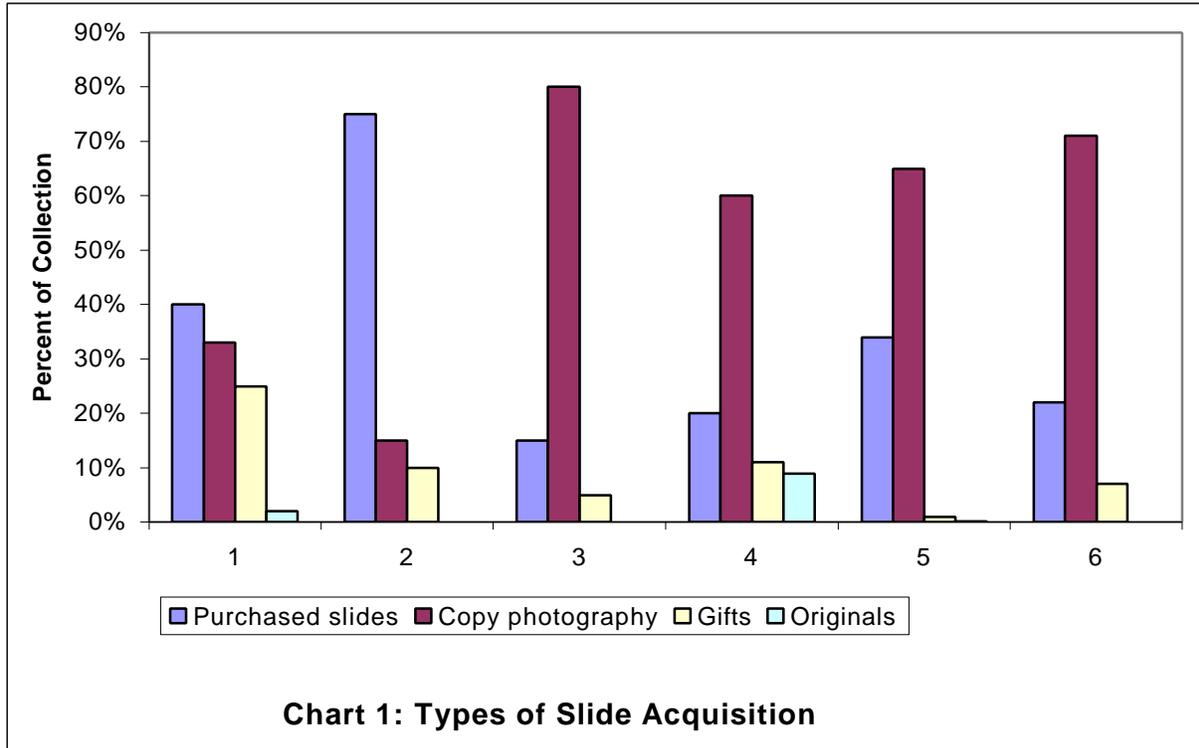
Libraries acquire slides in four different ways. They purchase slides from a vendor, photograph images from catalogs or books ("copy photography"), receive slides as gifts (primarily from faculty or alumni), or photograph the original object. As shown in the Chart 1, **Types of Slide Acquisition**, libraries 3 through 6 acquire slides primarily through copy photography. While the percentages range from 60% to 80%, the actual numbers of photographs taken varies depending on the total number of slides acquired per year. Slide libraries 1 and 2 purchase a greater percentage of slides than the other libraries. As we describe in the next section, purchasing slides is generally more expensive than copy photography, but it requires less staff and equipment. The capture environment for producing analog images includes some physical space and photographic equipment.

Library 1 receives the greatest number of gift slides, but all slide libraries acquire at least a small number of gift slides per year. Gift slides are the most variable in terms of associated data. They might include complete catalog information, such as source, creator, date, etc., or they might include no information at all. Therefore, although gifts are, by their nature, free, they may require a greater amount of research time for the slide library staff in order to gather the standard associated information (see Cataloging Costs later in this paper). Original photography, of which only libraries 1 and 4 do a notable amount, consists of a slide librarian or other staff member going out and taking photographs of original works.

	1	2	3	4	5	6
■ Purchased Slides	$2.82	$4.00	$3.50	$3.50	$3.75	$4.00
■ Copy Photography	$0.50	$1.13	$0.73	$4.55	$6.83	$4.50

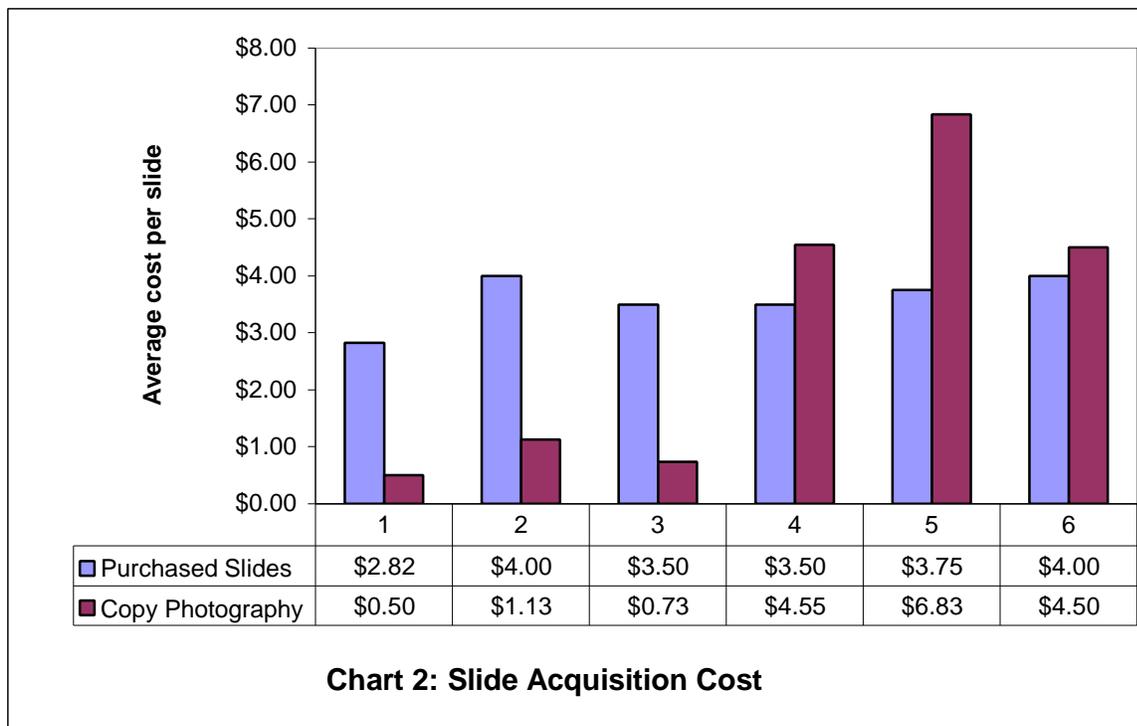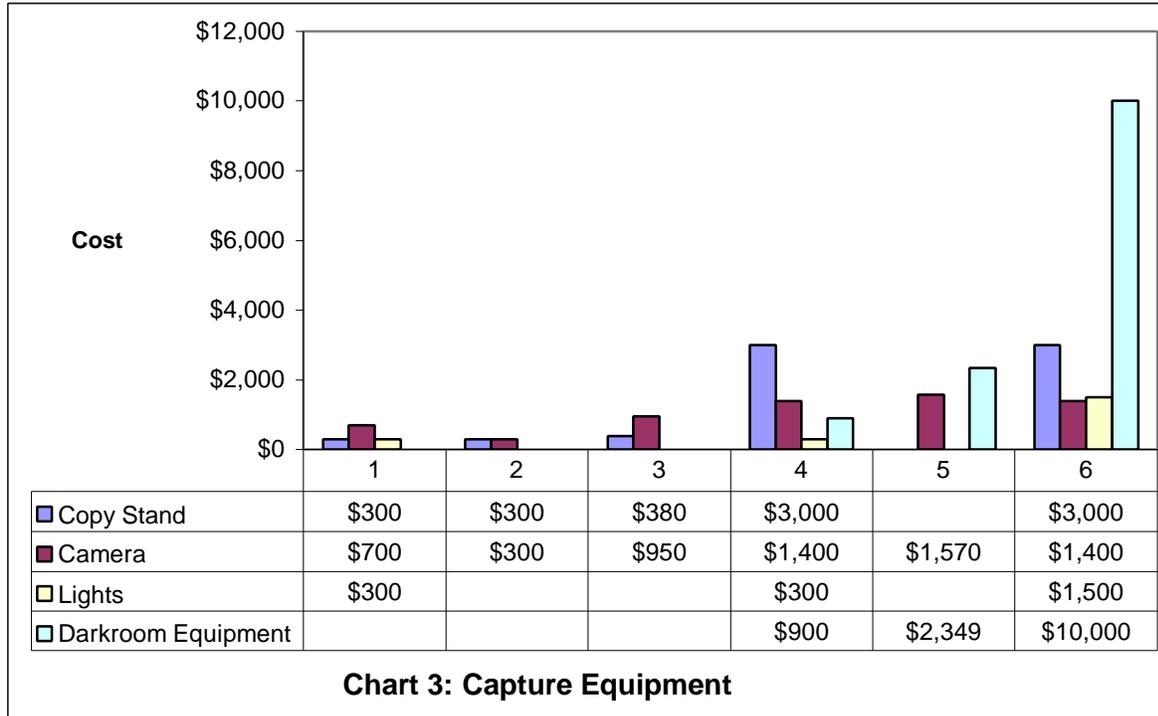**Chart 2: Slide Acquisition Cost**

Chart 2, **Slide Acquisition Cost**, shows only the average cost reported by each slide library for purchasing slides and for copy photography slides. Most of the libraries reported a wide range of costs. Some of the factors influencing cost include vendor pricing, cost of film, and photographer's salary. Original photography is not included in the chart because most slide libraries do a very minimal amount of original photography, and do not have data on the costs. There is no acquisition cost for a donated set of slides. The average price for a purchased slide is approximately $3.50; however the price can be as low as $0.75 and as high as $10.00 per slide depending on the slide and the vendor. Vendors often give discounts for large orders, or for purchasing a pre-arranged collection that the vendor has compiled to go along with a particular text or curriculum. Images outside of mainstream genre, school, or period used in Art History courses are likely to be more expensive and more difficult to find.

The cost of copy photography varies with the salary of the photographer, the time it takes to shoot the slide, and the cost of development. Some slide libraries send all film out for processing, some send out color film but develop black and white film in-house, and some develop both black-and-white and color film in-house. The average cost of a copy photography slide is approximately $3.00. The cost of copy photography also includes mounting the slide into special slide holders generally made of glass and metal or plastic. The cost for these mounting supplies and for labor may comprise anywhere from $0.50 to $1.25 per photograph.
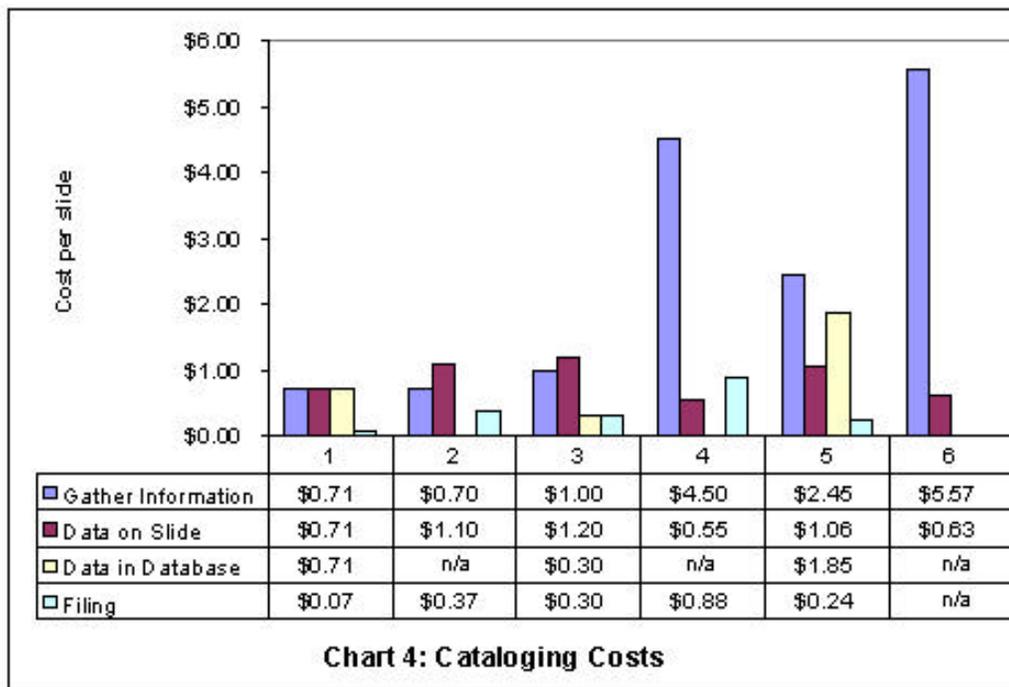
Capture Equipment

	1	2	3	4	5	6
▣ Copy Stand	$300	$300	$380	$3,000		$3,000
▣ Camera	$700	$300	$950	$1,400	$1,570	$1,400
▢ Lights	$300			$300		$1,500
▢ Darkroom Equipment				$900	$2,349	$10,000

Chart 3: Capture Equipment

Capture equipment in the slide libraries consists of cameras, copy stands, lights, and darkroom equipment. Darkroom equipment may include enlarger, timer, contact printer, safelight, and thermostat. A comparison of Chart 3, **Capture Equipment**, to Chart 2, **Slide Acquisition Cost**, shows that slide libraries with darkroom equipment do more copy photography and report higher costs per copy photography slide.

Costs for cameras ranged from $300 to over $1,500 for a Nikon F3 purchased in 1995. Some of the slide libraries still use cameras purchased in the 1950s and 1970s. Library 6 is a large collection with the highest percentage of copy photography (71%), therefore it is not surprising that it has the greatest cost for photographic and darkroom equipment. Blank cells within the Capture Equipment chart indicate that the slide librarian was unsure of the value or declined to answer. We do know that Slide Libraries 1, 2, and 3 have minimal darkroom equipment.

Cataloging Costs

Chart 4: Cataloging Costs

	1	2	3	4	5	6
☐ Gather Information	$0.71	$0.70	$1.00	$4.50	$2.45	$5.57
■ Data on Slide	$0.71	$1.10	$1.20	$0.55	$1.06	$0.63
☐ Data in Database	$0.71	n/a	$0.30	n/a	$1.85	n/a
☐ Filing	$0.07	$0.37	$0.30	$0.88	$0.24	n/a

Cataloging consists of gathering information that needs to accompany the slide, putting the data on the slide, entering the data into a database, and filing the slide. Chart 4, **Cataloging Costs**, summarizes the cost of each process for the six libraries. (Slide Libraries 2 and 6 did not report computer databases, while Slide Library 4 combined their data-entry time with gathering information; Slide Library 6 did not report filing time.)

The time it takes to gather information for each slide varies depending on how much information comes with the slide. The data that accompanies a purchased slide can vary greatly by vendor. And even slides with the most complete accompanying data may still require additional information, such as the slide library's accession number. With copied photos, the amount of information that needs to be gathered depends on the source of the photograph. If the image is from book written in a foreign language, or there is little text accompanying the image, a graduate fellow or curator needs to go to other information sources for background on the image.

Slides that are donated to the slide library from a professor or other source generally have little accompanying data, and more time is needed to gather information. Original photography comes only with the information known by the photographer or staff.

The process of writing data onto a slide or into a database is generally done at the same time that the information is gathered. Some libraries use labels printed out from their database to put on slides. Others use card files, which are filled out at the same time as the slide label data.

Library 3 provides an example of a slide library collection management system. The library has a card file for slides acquired before 1969, an in-drawer shelf list with photocopied back-up cards for

each slide, an accession records book, and a FileMaker Pro database. The database contains the following fields:

- Accession number
- Image location (including electronic location of scanned image)
- Classification (e.g. architecture, painting, sculpture)
- Nationality/culture (origin of the creator)
- Period/decade/style
- Artist/architect/maker
- Title/name
- Object/building type (pop-up menu provided, field may be left blank)
- Date made
- Original location
- View
- Medium
- Measurements
- Museum
- Description 1 (subject terms, may be left blank)
- Description 2 (name of book or periodical when image has been published as part of a book or journal)
- Source (where the slide was obtained)
- Copyright status (whether permission has been obtained to reproduce slide in electronic format)
- Scanning data (resolution, date, and course)

The information needed to fill out the above fields comes from collection data, library research, or accompanying text if the image was copied from a book or catalog.

Filing costs represent the initial filing of a slide. This task is often done by the curator, but can also be done by assistants. Because in many slide libraries users primarily locate slides through their physical arrangement, the actual storage location of the slide greatly impacts user access.

Re-filing

	1	2	3	4	5	6
Cost per month	$437	$130	$720	$680	$644	$500

Chart 5: Re-filing Cost per Month
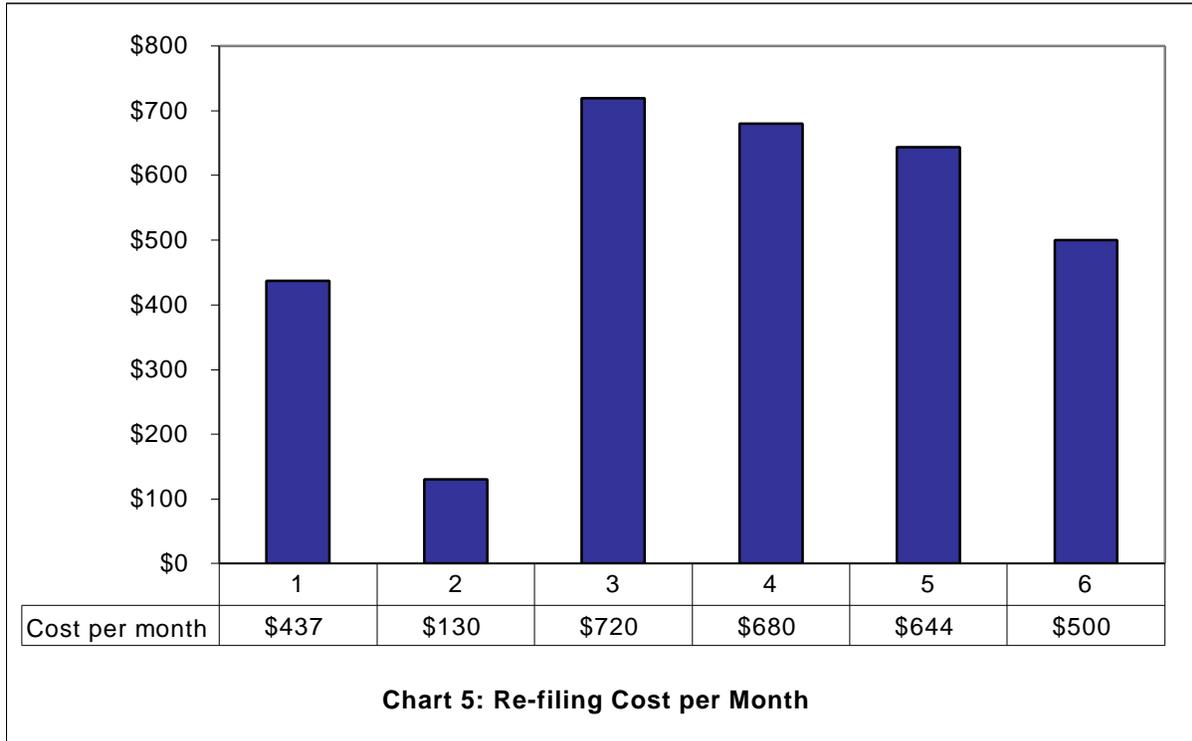
Student workers or clerical assistants generally do re-filing. With the exception of library 2, costs per month are consistently in the $400 to $700 range. Library 2 reports less time spent on filing, only five hours per week compared to ten to 35 hours for other libraries. For this reason, the cost per month was considerably lower. Our survey asked for the number of slides re-filed per week, the number of hours per week, and who did the re-filing. We also asked for the curators to estimate the cost of re-filing per month for the academic year.

Library	Slides per Week	Hours per Week	Cost per Week
1	1,570	20	$109.20
2	1,000	5	$32.50
3	900	35	$180.00
4	2,500	16	$170.00
5	655	16	$161.13
6	844	10	$125.00

Table 2—Re-filing Costs Per Week

Costs were determined by looking at cost per slide or cost per worker-hour. Library 2 shows lower cost per week due to fewer hours spent re-filing slides. However, as shown in Table 2, it is evident that their re-filing numbers are on par with the other libraries. Internal issues, such as the smaller size of their collection and physical space, help to explain the dramatic difference in time.

Security

The type of security employed by slide libraries depends on where the library is located on the campus and its administrative policies. If the slide library is physically housed in another library (departmental or main) that controls access, then their security needs are less than those of a freestanding library.

All of the libraries except for library 6 report informal security procedures. Library 6 has a student checking IDs 50% of the time. Not surprisingly, they report the highest cost for security at over $5,000 per school year. Other slide libraries do not have an individual dedicated to checking IDs, but have some informal means by which they control access. For example, library 4 keeps the door locked. If a library does have a student sitting at the front desk, the student is usually involved in other slide library duties such as answering patrons' questions.

Slide replacement

Most slide libraries reported that they replace slides upon request from a faculty or student. If they see that a slide is damaged, or notice one is missing, they will order a replacement slide. The cost for replacing a slide is the same as acquiring a new slide, except that the library can reuse the cataloging data from the original slide. On average, approximately 1% of the slides acquired by a slide library per year are replacement or duplicate slides.

If a slide is broken and needs to be remounted, the replacement costs include materials, the time spent typing and affixing a label, and remounting the slide. The average remounting cost is approximately $1.00 per slide including labor, although library 6 reported $4.00 per slide for remounting costs. The libraries report that time spent finding and replacing broken or unusable slides is approximately three to four hours per month.

The life span of a slide ranges from 10 years to as long as 50 years. The primary factors influencing the longevity of slides are the quality of the film and the amount of usage. Slides that are projected for long periods of time are exposed to heat and light and the image quality deteriorates quickly. Slides are generally considered unusable when the mount breaks or film tears. Discolored slides are often used if there is no replacement available.

Storage

Slide storage cabinets are an integral part of the of the slide library. Most of the slide libraries in this study use Neumade brand cabinets, in either 5-drawer or 78-drawer sizes. The current cost of these cabinets ranges from $180-$300 for the smaller ones, to $4,500 for the larger ones. However, many cabinets were purchased years ago (they last "forever") and at least one library reported purchasing cabinets from the main library on campus at a greatly reduced price.

Cost per Slide

Table 3 shows the cost per slide in each cost center of the slide library. The average cost to make a single slide operational is $7.89. The actual cost ranges from a low of $2.45 to a high of $20.50. (As we mentioned, this cost does not include infrastructure costs not addressed in this survey such as furniture and computers.)

Task	Average Cost per Slide	Range of Cost per Slide
Purchase	$3.60	$0.75-$10.00
Capture	$3.09	$0.30-$6.95
Cataloging (total)	**$4.11**	**$2.10-$10.00**
Gathering info	$2.49	$0.70-$9.50
Entry in database	$0.95	$0.30-$1.85
Entry on slide	$0.88	$0.30-$1.20
Filing	$0.37	$0.07-$0.88
Re-filing	$0.12	$0.03-$0.24
Replacement	--	--
Storage (cabinets)	$0.30	$0.02–$0.33

Table 3—Cost per Slide

Table 4, Cost per Year, shows the overhead costs to make a slide library functional. While the average provides a good benchmark, the range varies tremendously.

	Average Cost per Year	Range of Cost per Year
Overhead: security	$1,453	Minimal–$5,670
Staffing	$92,500	$46,000–$210,000

Table 4—Cost per Year

Conclusion

The purpose of this study was to gather information on analog slide library distribution costs to compare to the digital image distribution model of the MESL (Museum Educational Site Licensing) Project. Looking at the slide library cost centers in Tables 3 and 4 above, we can see that some of these costs will disappear or be replaced by other costs in the digital model. For example, digital images do not require re-filing. Instead of storage cabinets that take up a great deal of physical space, storage in the digital model will consist of hard drives and networks. Security will also look very different in the digital model, with firewalls instead of human ID-checkers.

By focusing on slide library cost centers that closely matched cost centers in the MESL Project, we hoped to enable useful comparisons between the analog and digital worlds. Before embarking on this study, we expected to find duplicative efforts (such as digitizing and developing catalog records) between the analog and digital environments. We anticipated that the overlapping costs of these might be greatly diminished in a more cooperative environment. For example, the slide library cost to create the textual description of an object depicted in a slide might be replaced by a payment to a museum for the museum's textual description of that object. After some analysis, we have determined that the solution is not so simple. Museum records are not in a form useable by a slide library, and they were gathered for a different purpose. Museum collection management data is

entered primarily for the museum's own internal use, while slide library catalog data serves both internal management and public usage. Slide libraries are also very localized to their environment, and tailor cataloging and indexing to their own user community. Their collections have been built over years of responding to faculty needs. Museum collection management data may still be useful to slide libraries, but cannot serve as a complete replacement for local cataloging and indexing.

This study has helped to provide significant comparative information for those interested in implementing digital image distribution projects by providing information on the costs and processes of running a slide library. Along with other studies, it should help to clarify what future digital image consortia should consider when planning distribution to universities.