CHAPTER 6

Faculty Perspectives on Teaching with Digital Images

Introduction

To really understand the framework of implementing a new technological tool, one must gain at least a rudimentary knowledge of what it will take to get users to employ it. In analyzing the findings of the MESL Project[1], one of the key tasks stressed by Principal Investigator Howard Besser was to determine the most serious impediments, both actual and perceived, to greater use of digital images among faculty: *"Much of the cost is getting faculty to use them and overcoming certain barriers that may be in place that inhibit more widespread faculty use."* It may not prove to be as simple as the contemporary adage *"If you build it, they will come."* We need to understand the various obstacles to teaching with digital images before such image use is widely adopted within the instructional process.

To begin to identify these issues, we designed a study of faculty who teach classes in the visual arts using digital images. We wanted early adopters of this technology to tell us what problems they had faced and to speculate about which impediments needed to be overcome in order for their colleagues to begin using digital images. We conducted two focus group sessions with faculty from many different universities, and supplemented this data with observations from Beth Sandore's MESL-supported pre-and-post classroom survey of faculty and students using MESL images (Sandore, 1997). We examined the results of a recent survey (Corbetta-Noyes, 1998) of faculty and slide curators on using digital images in the classroom. We compared our findings to transcripts from a discussion on MESL impact among MESL project coordinators at the final participants' meeting held on May 20, 1997 in Charlottesville. We also compared our findings to Eileen Fry's study of art history slide librarians and faculty (Fry, 1998).

We discovered that, from the perspective of the faculty interviewed, current university infrastructures were woefully inadequate for using digital images in the classroom. The issues that dominated both focus group sessions were technical support and training; acquisition and development of digital tools (software and hardware); time commitment to learn and develop the new technology; and some form of academic (if unrecompensed) recognition for their efforts from the universities. One participant characterized the dilemma of starting to use digital images as a "vortex of need". The complexity of the aggregate components (equipment, training, support, and more) was the overwhelming barrier for most faculty. Participants perceived digital image technology as a significant means of reaching a broader audience and there was a general consensus that new technologies stimulate and encourage new ways of thinking. Yet a number of issues were exposed in the course of the focus groups that suggested there were major barriers to widespread acceptance. Here is a brief summary of the major issues that surfaced:

Image Quality: Participants universally asserted that image quality was critically important, and that the digital images they were currently using were inadequate. However, when asked to elaborate (*What kinds of image quality do you need for what types of purposes? Is there a baseline of image quality that would get significant buy-in from your colleagues?*), most participants agreed that for many purposes, the quality of digital images was no worse than slides.

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[1] Information on the Museum Educational Site Licensing Project (MESL) is available at http://www.gii.getty.edu/mesl/. See the two volumes of the MESL final report for further details about the project; Stephenson and McClung, 1998; McClung and Stephenson, 1998.

Technical Support and Training: The relationship between technical support staff and faculty was an issue in both focus groups. Another obstacle to implementation was the lack of adequate resources for technical support and training, which were often project-driven (and therefore temporary) rather than actively integrated within a given program.

Tools (software and hardware): Participants voiced a need for a variety of tools with which to manage, manipulate, and display images and descriptive data. They offered examples of both commercially developed "generic" tools such as Photoshop and locally developed "custom" tools. The communications gulf between those who created the tools (programmers and technical staff) and those who used them (faculty, students, and visual resources staff) was listed as an impediment. Participants discussed the need for computer technicians with subject expertise.

Time and Recognition: Both groups were concerned with the value placed on their work by their universities and with the enormous time commitment required to develop digital projects. Institutions rarely offered faculty release time or credit toward tenure for work with digital image technology. This was perceived as a formidable barrier to non-tenured teachers.

Metadata: In discussing the need for metadata to accompany images, participants stated the importance of being able to customize for their students both the interpretive data (commentary) and descriptive data (attribution, dates, provenance) that accompanies an image. Because art historians were eager to contribute their scholarship to an image database as long as they received credit for their comments, this issue was closely tied to that of recognition by the university. Participants speculated that the descriptive data about images should flow in both directions between the providers of the data (museum curators) and the universities (art historians).

Resources and Collaboration: Several participants had good experiences in forging alliances with colleagues from other departments to share resources. This was an interesting finding because it proved contrary to faculty's tendencies to favor autonomy and solo endeavors over collaborative projects.

This chapter is divided into six sections beginning with the **Introduction**, which summarizes the major findings of the focus group interviews. **Methods** outlines the study methodology and briefly summarizes the participants' background. **The Vision: New Ways of Thinking** examines the impact of digital image technology from the perspective of faculty. This section describes the many ways faculty are currently using digital images to teach and how it has affected their perception of their field. **Implementation: It's More than Infrastructure** examines the challenges encountered by faculty and provides a detailed summary of the findings and observations from the focus group interviews along with quotes from the focus group participants. **Teaching: Pioneers in the Classroom** describes some of the issues surfacing as a result of the advent of new technologies in the teaching process. This section includes suggestions from faculty for encouraging the widespread use of digital images to teach. **Into the Future** looks at the future implications of using digital technologies.

Methods

We conducted focus group interviews at the College Art Association (CAA) conference in Toronto on February 27, 1998. The CAA Conference is the largest gathering of art and art history faculty in North America. This gave us the opportunity to conveniently gather together participants from diverse locations. Naturally, faculty were immersed in thinking about teaching and their own roles as art historians while attending this conference. This reflective state of mind was conducive to the

goals of the focus groups. We organized two focus group sessions, both scheduled at low-conflict times. Prior to the conference we recruited participants through electronic mailing lists likely to be of interest to instructors involved with digital images; we also contacted specific faculty known to be teaching with digital images. During the conference we made announcements and handed out leaflets at sessions oriented towards digital information, and personally approached people who indicated they taught with digital images. Only 16% of our resulting participants (two out of 12) were from MESL campuses.

The focus groups were intended to raise underlying issues and concerns that might otherwise be missed using other research methods. The focus groups' goal was to probe further into issues raised in the MESL project and to gain a fuller understanding of some of the barriers and facilitators to using digital images in the classroom. We chose to use focus groups because they were a way to encourage self-disclosure and observe the thought processes of participants. These discussion groups offer participants the opportunity to raise buried or neglected issues for discussion and encourage alternative explanations. It has been noted elsewhere that focus groups are not intended to reach a consensus, develop a plan, or to substantiate preconceived notions; rather, they are meant to uncover the participants' beliefs on a given subject in order to derive understanding. Participants' opinions may shift during the course of a discussion (Krueger, 1988). We believed the focus group interviews would enable us to get directly at issues that might not be revealed in a topical survey or even a one-on-one interview.

The primary concern of this study was the usage (whether actual or potential) of digital images in universities. The interview questions were framed around the topics of university infrastructure and accessibility of digital images to faculty and students (see Appendix 6A for the focus group questions). The university infrastructure is an integrated system of essential elements that support the foundation and framework of the end-user system. These elements include equipment in classrooms and labs for access by students and faculty (projection units, computers, network wiring); tools for storing and viewing images; and other technical aspects such as the image delivery method and the delivery speed.

To ensure a discussion with adequate depth, we planned to conduct two separate focus groups: one group of participants with several years' experience using digital images to teach, and another group which included both users and non-users of digital images in order to cull a wide range of responses and concerns. We invited faculty members to share their ideas and opinions on teaching with digital image technology. We were interested in the experiences, whether good or bad, of those who had used digital images to teach. For those who had not yet used digital technology for teaching, we sought to determine the barriers to, or concerns about, teaching with digital images. The issues we wished to discuss are listed in Table 1 below.

- What were the advantages/disadvantages to using digital images?
- Why did or didn't you teach with them?
- What would need to happen for you to teach with them?
- What were the inherent problems (actual and perceived) of using the digital images?
- Would you use them again? Why or why not?
- What were the inhibitors to using digital images (particularly for non-users)?

Table 1—Fundamental Issues For Discussion

This initial set of issues was refined and developed into the focus group questions (see Table 2). These primary questions were expanded with probes and some scenarios to produce the full set of

questions (listed in Appendix 6A). The same questions were used for both sessions although the exact wording varied slightly from session to session.

1.   a. Who has used digital images in the classroom?
       b. Who would like to use digital images?
2.   Would you briefly describe your experiences with using digital images to teach.
3.   What were the advantages and disadvantages of using digital images in the classroom?
4.   What differences do you perceive between using digital images and other visual resources such as slides, videos, books, and prints?
5.   What are the critical factors in deciding to use digital images to teach? (Are there barriers or impediments to using digital images?)
6.   How can other faculty members be encouraged to use digital images?
7.   Would you use digital images again to teach?

Table 2—Primary Focus Group Questions

Two focus groups were held with a total of 12 participants. (See **Appendix 6C** for a list of participants.) Each 90-minute session was tape-recorded and later transcribed. The groups corresponded to our expectations regarding the user experience of the participants; however, we did not anticipate that nearly half the participants would be studio art teachers. While we specifically targeted art history teachers when recruiting for the focus groups, we discovered that many of the teachers using digital images who were most interested in participating were studio art teachers. The first group (the mixed group) was divided evenly between art history and studio art instructors with many different levels of experience with digital images, including a couple of participants who had not used digital images to teach. One participant was a librarian who had previously taught art history. The second group (the experienced group) consisted of early adopters of digital image technology and demonstrated considerable experience teaching with digital images. Both studio art and art history instructors were represented in the second group which, with three participants, was considerably smaller than the first group. As a result, the discussion in the second group was more in-depth. Participants had more time to speak and many issues were raised before questions could be asked. The contrast between the first, larger, group and the second, smaller, group revealed many common concerns despite the relative disparity of experience between them.

The focus group participants in both sessions agreed on the key issues. For example, although copyright and fair use were deemed outside the scope of these focus groups, they were raised throughout the discussions as issues to be concerned about. Studio art teachers specifically mentioned appropriation, and the issue was raised more than once. Appropriation is literally "to make one's own". In art, appropriation is taking an existing image and using it to create a new one or as an inspiration for a new work of art. If "fair use" becomes more restricted in the digital realm, there is fear that artistic freedom may also become restricted.

This report explores some of the themes that arose in the focus groups. Due to the unstructured nature of such discussion groups, participant responses cannot be quantified. However, the overall themes and conclusions are presented in depth.

METHODOLOGY

A questionnaire (see **Appendix 6B**) was administered at the beginning of the focus group interviews for the purpose of collecting demographic data, determining the participants' level of expertise, and

determining preconceived views on barriers and facilitators to using digital images (see Table 3). We collected sufficient data to ascertain a general range of responses. This data was summarized in order to put the responses in a context (see **Appendix 6C**). Although critics might consider focus group data anecdotal, this study does reflect the impact of digital image technology on the teaching of art. Many issues discussed in these focus groups were raised in earlier tape-recorded discussions conducted with a different set of university faculty and staff during the MESL project follow-up (Charlottesville 5/20/97).

PARTICIPANTS' BACKGROUND

The seven women and five men who participated in the focus groups varied in their level of experience with teaching with digital images. The number of terms they taught with digital images ranged from none to 32. Participants taught art or art history for up to 40 years. The number of digital images used in a course ranged from none to 1400. (See **Appendix 6C** for further background data.)

A NOTE ON CONFIDENTIALITY

To ensure privacy, participants are identified by a letter code. The focus group sessions are identified as "fgi1" for the first session or "fgi2" for the second session. The page number listed refers to the transcripts.

The Vision: New Ways of Thinking

Our focus group participants described their involvement in a broad spectrum of projects. Some projects were elaborate and involved many people in a collaborative effort, each an expert in a different field. Teachers who created digital image projects were often solely responsible for development and maintenance. The burden of such an undertaking raised a host of issues in the focus groups. Participants used digital images principally for classroom display and assignments. Art history teachers used digital images to create study guides for students, to make comparisons in class, to allow students to examine the images independently, for group discussion, and to manipulate images to draw attention to one aspect of them. Such manipulation could include outlining objects in images, creating overlays, adding or removing color, or showing part of an image in many levels of detail. Studio art instructors have used digital images for demonstration, lecture, critique, and as source material to create new art. Several participants have worked on large-scale projects such as reconstructions, and image databases which required substantial amounts of time and expertise to develop. For background on development of an image database, see "Introduction to Imaging: Issues in Constructing an Image Database" (Besser & Trant, 1995).

Participants saw digital image technology as a means of reaching beyond conventional academia.

> *"I have a broader audience in mind…I think it's a great way to reach a lot of people beyond what we see with the trickle-down theory of academic journals where most people don't have access to it. so I'm actually thinking about a reverse model, where you get ideas out to a broader range of people rather than so much academic research." (Participant L, p. 5, fgi2)*

ADVANTAGES OF DIGITAL IMAGES

Participants cited some of the advantages of using digital images rather than slides. The most significant advantage was that they can be used for applications that could not be performed (at least not easily) with slides. Digital images can be used for animation, reconstructions, and other innovative ways to visualize static materials. These types of interactive applications encourage the viewer to take part in the learning process. Another advantage of digital images is that they can be used asynchronously to study at one's own pace from a remote location. While an online digital image is available to multiple viewers from different locations at the same time (assuming there are no copyright restrictions), a slide is restricted by its physical limitations; only one person can use it at a time. Easy manipulation was cited as another benefit. New images can be created easily, and existing images can be customized (by adding titles, outlining structural elements, or resizing) and juxtaposed with other images. Finally, motion, interactivity, and a mixture of media were cited by participants in both sessions as devices that were very effective in keeping the classroom focused and attentive. In fact, one participant stated that students are beginning to expect digital presentations. *"The fact that something happened through time, that you had to do something. My students said it kept their attention". (Participant L, p. 30, fgi2)*

> *"One of the prime advantages is motion, whether it's video or software. One of the reasons that I got into this is so that I could do something with computer software that I could not do in class. Through either animations or overlays, I could be much clearer and I could make points effectively through a digital medium that I can't do through something that is static." (Participant L, p. 29, fgi2)*

ADVANTAGES OF SLIDES

According to focus group participants, a key advantage of slides over digital images is that a slide can be viewed simply by holding it to a light, while a digital image must be accessed electronically and viewed with the proper (albeit relatively commonplace) software. Another advantage of slides is that you own them outright, in contrast to digital images which are emerging as a licensed product. Several participants expressed hesitation about the licensing arrangement, where one only has the right to use an image for the duration stated in the agreement. Participants conceded that slides were still useful and nearly all participants continued to use them.

> *"I still use slides for all my classes except one. The slide is still good technology. I still have big images and it's still less fuss for me." (Participant L, p. 32, fgi2)*

On a practical note, faculty agreed that a basic advantage of slides over digital images was that slides are presently the prevalent technology in art history departments, and faculty have built their course curricula in conjunction with their slide collections. Several participants stated they have large collections of slides made from their own photographs of art. (It is not within the scope of this paper to examine copyright issues.) Although participants did not discuss slide libraries in great detail, it is important to note that slide collections are built at the local (departmental) level and cater to the needs of individual faculty members. Slide libraries contain all the relevant images which teachers require for their curricula and can respond quickly to curricular changes. Distribution models that limit their selection of digital images to those images available from participating museums cannot by themselves supply the images faculty members require. A significant percentage of images used in teaching art history is not from museums. A critical precondition to faculty use of a digital distribution scheme will be mechanisms to easily integrate images from other sources in ways that make them look and function like a unified collection.

Many of the same advantages and disadvantages our focus group participants discussed were revealed in a recent survey of the arts community (Corbetta-Noyes, 1998). However, the survey respondents seem to have had a greater awareness of the technical aspects of searching a collection (e.g., the use of "*multiple access points*"), probably because the survey included slide curators.

- *"The positive uses of digital images are the ability to manipulate and compare images, improved availability to greater number of users, the ease of searching through multiple access points, text can accompany the images, students benefit greatly from the ease of reviewing, using for projects, and searching. The negative aspects of using digital images are the diminished resolution (compared with slides), the need for high-end equipment, and a high learning curve for faculty."*

INNOVATIVE USES OF TECHNOLOGY

Many participants described a hybrid method of alternating slides and digital images in the classroom.

> *"Double projection has become standard. I'm suggesting a hybrid way to my colleagues. We put all 1,400 Italian Renaissance images on one CD. The teacher will have one system, then the things we don't have, they can put as slides in the other projector." (Participant J, p. 32, fgi2)*

Overall, there was a consensus that new technologies bring about new ways of thinking about teaching. This idea was a little nebulous, but it was a strong impetus for several participants to push ahead with new technologies.

> *"When you have new methods of visualizing, new methods of creating, or substantiating visual ideas, you get new ideas." (Participant L, p. 5, fgi2)*

> *"With the digital image, I'm working with something very dynamic, very flexible…In the slide collection you have one overall image; in my digital collection, I can have it 30 times if I need it. I can insert it wherever I want. And if I want to pass that image through a processor and emphasize the linear quality in a painting, I can do it. It's a dynamic thing we are just beginning to explore…the fact is, we are dealing with a fundamentally different kind of image and I think we all belong to a generation of explorers trying to figure out what that dynamism can mean in terms of communication, in terms of teaching." (Participant A, p. 13, fgi1).*

> *"My push is to redo the History of Art doing things that we've always wanted to do or things that we haven't thought of doing that we can now do." (Participant E, p. 5, fgi1)*

> *"I was looking for some way to show context and that's when I got started." (Participant E, p. 5, fgi1)*

While many uses of digital images merely emulate the function of slides as reproductive devices, participants had begun to explore more highly evolved uses for digital images in teaching. Several participants had employed multimedia reconstructions. One project involved digitizing the frescoes of the Italian Renaissance artist, Piero della Francesco, and viewing them in a three-dimensional environment to show context. Another participant referred to an animated reconstruction of the Roman Coliseum as an example of helping students visualize art that no longer exists.

> *"I think we are changing the expectations for how to visualize…I've always been able to visualize it [the Coliseum], but I don't think most of my students could. And so I never really knew the difference between what I knew versus what they were getting out of this." (Participant L, p. 30, fgi2)*

Another participant explained that one can achieve a perspective on a work of art that might not have been possible for even the artist let alone viewers through history. For example, a three-dimensional rendering allows one to spin, zoom in or out, and fly over an object. The possibilities of this dynamic brand of art history instruction seem to be just emerging. For educators and curators alike, this added perspective to the critical viewing of art and cultural heritage objects seems to be a significant addition to the process of evaluating and appreciating art.

> *"We can now see things that never could be seen but from an angle…we can see how things come together. We can see in a way that the poor artist was never able to see it." (Participant E, p. 6, fgi1)*

Implementation: It's More Than Infrastructure

The most interesting topics raised in the focus groups were social and institutional, concerning the use of metadata, recognition by universities, and the role of collaboration. These issues involved faculty, often across many departments; administrators; and even outside organizations, such as publishers and museums.

> *"There may be another issue here that's a lot harder to address and that's changing the ideas and attitudes of people who are in charge of programs…when you've got people who are in power who say this is a bad thing to do and indicate that they won't reward anybody that will engage in it, it really obviously turns off." (Participant K, p. 25, fgi2)*

> *"When computers come into an organization, the problem is not computerization, it's systemization. Systemization is the structural changes in the organization that happen because of the enabling properties of the new technology as it interacts with the current state of affairs." (Participant I, p. 33, fgi1)*

The complex array of issues at the core of using digital images to teach can be a deterrent to faculty and administrators. Faculty members do not have enough time to lend assistance to one another and it has been noted persistently that there is often a serious lack of resources. The focus group of early adopters agreed the complexity of the aggregate components (equipment, training, support, and more) was the overwhelming barrier for most institutions and created a "*vortex of need*" for faculty trying to get started.

Participants were asked in the pre-focus group questionnaire to divide and allocate a total of 20 points among a set of barriers to using digital images. Participants were asked to assign more points to barriers they felt posed greater problems, and were encouraged to suggest other obstacles to the use of digital images. Table 3 shows the barriers, their total points allocated by all participants, and the final ranking of each. Two participants did not allocate points to any barriers. Some participants used checkmarks rather than a number. In these cases, the 20 points were distributed evenly among the barriers checked. One participant checked three barriers so we allocated six points to each barrier checked rather than assigning a fraction. The average number of barriers chosen by the participants of both groups was 5.4. For the first focus group, the average number of barriers chosen was 4.7, while the exact number chosen by each participant in the second group was seven.

Barriers	Sum	Rank
Image selection	34	1
Copyright issues	26	2
Delivery speed to display images	24	3
Image quality	23	4
Cost of acquiring or using images	18	5
Software tools and templates to manage images	17	6
Time required	17	6
Poorly equipped classrooms and labs	16	8
Technical support and training	8	9
Acceptance by other faculty members	8	9
Recognition from university [added by participant]	6	11
Accessibility for students	1	12
Text data	0	13
Other barriers added by participants		
Continuing availability of digital image collection due to tech changes (obsolescence)		
Recognition from university for expertise and pioneering work (6 points were allocated)		
Working with many different people to accomplish teaching goals		
Appropriation essential for studio art instructors		
Software constraints (web browser constraints, difference in resolution/spatial/color) (studio art)		
lack of images originally created for cyber (studio art)		
Critical mass of images		

Table 3—Barriers as Listed on the Pre-Focus Group Questionnaire

The early adopters in the second focus group session listed more barriers on their pre-focus group questionnaire than the first group of mixed users. Each participant allocated points to exactly 7 barriers although the barriers were not the same. An additional barrier was written in by one of the participants.

> *"Part of the impediment itself is the complexity of all the things that have to be in place almost simultaneously." (Participant L, p. 27, fgi2)*

> *"You have to have all these things in place before it can work: incentives for promotion, the critical mass of images, the projection equipment, the technical support, the time to develop, all of those things. And if you take any one away it won't work." (Participant J, p. 26, fgi2)*

FINDINGS AND OBSERVATIONS

Following are summaries of the most important topics discussed in the focus groups along with quotes by participants. For those who plan on converting to digital images, or who use them currently, these are the critical issues that need to be dealt with. The topics discussed included both

physical infrastructure issues (e.g., delivery speed, tools, and equipment) and social and institutional issues (time, resources, and recognition).

Most reservations were shared by both studio art and art history teachers, although some of the issues discussed (such as appropriation and delivery speed), were of greater concern to the former. Studio art teachers' comments in the focus groups accentuated the various limitations of the technology, but they were highly cognizant of what digital technology could do for them in their profession. Although studio art and art history teachers have different uses for art images (creative vs. pedagogical), there is an opportunity to form a closer alliance to share resources (such as computer labs and digital images) that might strengthen both departments. (Note: studio art and art history are frequently part of the same department, and they may compete against each other for departmental resources.)

IMAGE QUALITY AND IMAGE SELECTION

Image quality is often the first issue raised in any discussion about converting to digital images. Participants universally asserted that image quality was critically important, and that the digital images they were currently using were inadequate. However, when asked to elaborate (*What kinds of image quality do you need for what types of purposes? Is there a baseline of image quality that would get significant buy-in from your colleagues?*), most participants agreed that for many uses the quality of digital images was no worse than that of slides. The focus group discussions allowed us to explore this issue with faculty in greater depth. We discovered that their concerns about image quality were basically the same whether the image was digital or analog.

> *"The problem of resolution is so great that no one's going to bother to solve it. They're just going to bypass it." (Participant I, p. 12, fgi1)*

> *"Many Art Historians at this point are interested in ideas and various political and social issues, and they use art as documents. In those cases, the quality of the image isn't terribly important. For people dealing with connoisseurship issues, then it's absolutely critical." (Participant K, p. 20, fgi2)*

A more important factor was having a critical mass of useful images immediately at hand. Teachers of contemporary art and studio art were particularly concerned since images are often unavailable. One participant characterized contemporary art as "a moving front" and stated the difficulty in obtaining images (Participant D, p. 8, fgi1). Participants agreed it can take more than a year to gather the appropriate images and devise a course curriculum. They wanted images to conform to their curriculum rather than vice versa, and said that the database of images needed to be flexible, easy to use, and comprehensive. This was a prominent issue in the MESL project. The digital image selection made available to universities was limited to those images selected from the collections of the seven participating museums. In most cases, MESL universities supplemented the project-supplied images with locally scanned images.

> *"You need the critical mass of the right images. The ones from the American museums by themselves are not going to be enough for the basic survey course." (Participant J, p. 13, fgi2)*

> *"I want different images than my colleague who teaches the same course. So what we want are as many as possible in the great database in the sky." (Participant H, p. 26, fgi1)*

> *"I wanted to add a breaking mechanism on the free flow of images. I know it's wonderful to have lots of images but getting a bunch of images from a museum is totally arbitrary, and has nothing to do with the intellectual fundamental material basis for giving a class." (Participant E, p. 26, fgi1)*

TOOLS

> *"Once you're in cyberspace, everything is software." (Participant I, p. 23, fgi1)*

About half the participants in the first focus group brought up the necessity of user-friendly software tools. They insisted on the need for software tools to help them organize and edit digital images, and to customize the interface and filters of the image databases. It was generally agreed that we will likely continue to see a "hybrid world of slides and digital images" (Participant I, p. 12, fgi1). Participants voiced the need for tools that track both the physical location of slides and the virtual location of digital images.

> *"In order to use it [the image database] effectively we've got to have the local tools that will let us mold it the way we and our students can use it." (Participant D, p. 26, fgi1)*

It was evident that the participants envisioned several levels of tools. On the first level were "functional tools" that emulate analog devices such as slide carousels and light tables. For example, participants wanted to have the abilities to "make your own collection, push images around, and make comparisons" (Participant D, p. 7 & 8, fgi1). The next level were "interactive tools" to interact with the image and affect changes. For example, tools to "allow students to manipulate the composition of a digital image" (Participant A, p. 13, fgi1). The third level of tools were "development tools" for a networked environment. For example, participants discussed tools for faculty to add annotated comments about works of art along with a mechanism to track these comments by each faculty member.

In a recent survey of the arts community on using digital images (Corbetta-Noyes, 1998), respondents sought tools and features similar to those described by the focus group participants. Likewise, respondents were also concerned with the text that accompanies images:

> *"The features most desired in a resource tool for curating/teaching were ease of use, flexibility, ability to compare, zoom, manipulate images, and especially links to supplemental text. A virtual workspace, on-line exams, study guides and course assignments would also be incorporated into an image resource."*

Participants were highly concerned about the complexity of software, release time to learn new software, training, and technical support. The gap between those who create the tools and those who use them was discussed at some length. Although participants did not necessarily see tool development as only a local issue, they discussed the need for technicians with subject expertise. Both focus groups raised the issue of technicians with subject expertise. Several participants agreed that software programs created without an understanding of the field can cause problems.

> *"A problem is using programs created by people with an engineering approach; they don't do what people in the humanities want." (Participant D, p. 16, fgi1)*

One participant suggested that students of art history with strong technical skills who are not able or willing to pursue advanced degrees in art history should be encouraged to work within the department with faculty members to develop technology-based curriculum support products.

> *"There are a lot of people who pass through undergraduate and graduate departments who are really interested in the subject matter but who are really not up to getting a Ph.D.…Those are the people who should be harvested and put to work instead of hiring somebody who doesn't want to do the work, or somebody who doesn't have any sympathy for the subject matter." (Participant E, p. 17, fgi1)*

TIME

Time was one of the prominent issues raised in both focus groups. Participants were mainly concerned about the amount of time involved in technical preparation and course development, and the lack of release time to learn and develop projects. One studio art teacher noted that faculty in the Computer Science department receive automatic release time every year to learn, while she received none even though she taught an art production class requiring the use of new software (Participant H, p. 18, fgi1). She regarded this disparity as a lack of respect for the work involved. The amount of time many participants spent developing digital projects was substantial. One participant worked on a successful project for many hours a day for two years, along with a cadre of experts. Some early adopters collaborated with colleagues after realizing the magnitude of building complex projects.

On the issue of time constraints in the field, participants had much to say:

> *"extremely time consuming" (Participant B, p. 17, fgi1)*

> *"give up a year to do it" (Participant E, p. 14, fgi1)*

> *"The amount of time that goes into it...incredibly time-consuming" (Participant J, p. 13, fgi2)*

> *"There has to be some kind of compensation…if I put in the time, there's no compensation" (Participant L, p. 23, fgi2)*

> *"There either has to be a monetary incentive or a time-release incentive." (Participant L, p. 24, fgi2)*

The issue of time and compensation led to an illuminating discussion concerning faculty receiving recognition for their work with new technologies. An art history teacher wrote on her questionnaire that the greatest barrier to her use of digital images was lack of "recognition for expertise and pioneering work from university, and working with many different people to accomplish teaching goals".

> *"This takes a lot of work. I have to be up to date in two fields, in art history and technology. Both are time consuming things and I also have to deal with a lot of people." (Participant L, p. 8, fgi2)*

EQUIPMENT, EQUIPPED CLASSROOMS AND LABS, AND ACCESSIBILITY FOR STUDENTS

Participants generally agreed that facilities were inadequately equipped for the networked distribution or projection of digital images. Many of the same issues applied to both classrooms and labs and a few were unique to each setting.

Some classrooms were in the process of being refurbished, but were not yet upgraded. Some participants discussed the difficulty of obtaining advanced equipment to mix media seamlessly in the classroom.

> *"It would be nice to be able to have a slide on and compare with digital projection a whole bunch of stuff on the other side...the same projector can switch from computer to the video seamlessly so you can do that easily enough...they [students] are able to attend better if you shift. It would be nice to have it all digitally." (Participant D, p. 28, fgi1)*

> *"Projection and light intensity are uneven so you can't project slides and digital images at the same time." (Participant D, p. 28, fgi1)*

> *"Being able to control the lights is critical." (Participant H, p. 29, fgi1)*

> *"Students don't have individual workstations in the classroom." (Participant D, p. 8, fgi1)*

> *"A small percentage of places are equipped or have equipment in their budgets" (Participant E, p. 11, fgi1)*

> *"Most classrooms that you may teach in don't have appropriate networks that carry big images." (Participant J, p. 2, fgi2)*

Participants seemed doubtful about the prospects for a full-scale conversion to digital image libraries, and did not foresee an increase in funds to their departments to allow for such an undertaking. Student access was also discussed, and it was generally agreed there were not enough workstations or labs at most institutions to accommodate students. One participant commented that administration is pushing new technologies, but not confronting the problem of how to make equipment available, or offering sufficient training and technical support. This is historically a prevalent and unresolved problem for institutions wishing to demonstrate their state-of-the-art resources in order to maintain the highest possible profile in a fiercely competitive academic world. Accordingly, subjects which require computerized resources, such as physics and business administration, or which establish the school's principal identity, are provided with the necessary funding to put their departments on the "cutting edge" of available technology. Another participant commented about the increased burden on the library's resources, often a casualty of campus fund reallocations.

> *"Our campus has just started offering courses which require the use of a computer. The campus cannot make 12,000 computers workstations available so students come to the library. If faculty suddenly offer all their classes on the Web, it will blow us out of the water. Someone has got to decide whether students should bring their own equipment or whether we offer to sell it to them. Nobody is discussing who provides the equipment to give students access to your class." (Participant F, p. 30, fgi1)*

Other participants complained about the lack of computers in labs and the dilemma of having to kick students off them. One participant described a situation where he had only ten site licenses for a product, but there were sixteen students in the class.

> *"I like to leave space available because one computer is always going to go down" (Participant I, p. 31, fgi1)*

> *"If there aren't enough computers, I find I have to get to class 20 minutes early and start kicking the kids out." (Participant G, p. 30, fgi1)*

> *"We have different rules for different labs. Students are allowed to use the SGI's even when a class is being held in that lab because they are so expensive we want to get as much utilization out of them as we can." (Participant H, p. 31, fgi1)*

DELIVERY SPEED TO DISPLAY IMAGES

Although this issue was ranked as the third greatest barrier to using digital images on the pre-focus group questionnaire, it was not raised by the participants during the focus group discussions. Several participants agreed the amount of time they were willing to wait to view an image depends on the purpose of the image.

> *"If you're going to do the study of individual works like blowups and such, where someone is going to spend some time with an individual work then it's worth the time and effort to have a high quality larger image that takes time to download." (Participant L, p. 19, fgi2)*

In the first focus group session the moderator directly asked, *"Is bandwidth or delivery time for an image a problem?"* A studio art teacher who taught computer animation responded: *"because it's motion media, it's a huge problem" (Participant H, p. 27, fgi1).* This issue was a major concern for studio art teachers involved with video or three-dimensional production.

One participant in the second focus group session mentioned a problem with synchronizing her lecture and showing images when she taught a class using a two-way video. She described this scenario in her introductory remarks.

> *"There was a time lag between my lecture and trying to get the digital image to come up on the other end. I had to talk slow to coordinate the timing. This was a surprise. I didn't think that would happen." (Participant J, p. 3, fgi2)*

RESOURCES

Art history has never been a generously funded discipline, and the issue of scarce resources is not a new one. Participants expressed their concern about funds earmarked for special projects. When the funds dry up, the project is left unfinished or unsupported. Participants were skeptical about investing their time in a project that might not continue.

> *"Two faculty members are working on projects that are extremely time-consuming. Technical support comes in the form of programs that are specially funded. When those run out, there are projects that are unfinished." (Participant B, p. 17, fgi1)*

One example of resource allocation that was met with mixed emotions in the second focus group session was site licensing.

> *"That just hits right at major issues of cost and time. I don't want to fuss with licensing. The number of site licenses is an issue and then the constant upgrades. I actually really like having the slide because if it's my own slide then I turn it into a digital image and I still have the slide." (Participant L, p. 32, fgi2)*

> *"My only concern with these various licensing things is that they be in such a way that we will be able to talk our administration into paying for it." (Participant J, p. 33, fgi2)*

> *"If they use the subscription model to a magazine, you buy that, you still have the magazines each time they come to you...when you do get the budget crunch and you can't continue the vendor's not going to come and pickup all our magazines and take them away" (Participant J, p. 34, fgi2)*

> *"People don't understand licensing. The word does not mean anything to them. But subscription does, that's understood." (Participant L, p. 34, fgi2)*

An interesting discussion about collaboration grew out of consideration of resource questions. Three types of collaboration were suggested. The first type of collaboration was between outside vendors and schools, and the second type was between departments at the same institution. The third type of collaboration was between faculty members within the same department. One participant's final comments were that institutions should demand partnership with computer makers:

> *"What percentage of their income comes from universities? We could do a lot for them and they should do more for us." (Participant E, p. 33, fgi1)*

Collaboration with businesses for the purpose of receiving equipment is tougher to push through in the Humanities than the Sciences. However, interdepartmental collaboration might be one solution.

Simply put by one participant, *"how can administrators get the most bang for their buck across the entire institution?"* (Participant J, p. 28, fgi2). Participants cited many examples of cooperation between faculty in many different departments to develop projects and share resources. Art history faculty may not realize how many other departments, like Chemistry, Geography, Engineering, Architecture, Studio Art, and Computer Science, might use digital images for various purposes.

One participant had positive experiences with recruiting colleagues from other departments to share resources. Although the early adopters found creative ways to deal with limited resources to accomplish their projects, they commented that budgets haven't adjusted to compensate for the increased cost of new technologies. This has often led to resentment by other colleagues or departments who perceive this as competition for the same, scarce resources.

OBSOLESCENCE

As in all institutions dependent upon the power and versatility of computers, schools must contend with how constant advances in technology render current hardware and software obsolete. One participant added this issue as a barrier to using digital images on the pre-focus group questionnaire, *"some concern with continuing availability of my digital collection in years to come (tech changes)"* (Participant A, fgi1, questionnaire). Seasoned users were troubled by how quickly digital projects can become obsolete. A participant who had created a product that was now obsolete expressed her concern for "publishing" in a digital environment. *"You can do something, technology changes and it's gone, unlike a print publication."* (Participant L, p. 4, fgi2) For more information on the problem of obsolescence, see the article by Peter Lyman and Howard Besser "Defining the Problem of our Vanishing Memory: Background, Current Status, Models for Resolution" (Lyman and Besser, 1998).

METADATA

In discussing the need for metadata, participants noted the importance of being able to customize the data at the user end. In the course of the focus groups, it became evident that there was some confusion among participants as to what constitutes metadata. Metadata is defined as "data about data". It is the information used to index and identify a document or image. Some examples that constitute metadata for a work of art are attribution, provenance, dimensions, medium, and documentary evidence. (Some participants misunderstood metadata to mean interpretation and commentary about a work of art).

Participants were insistent that they must have the ability to add their scholarly comments to the descriptive data provided with images.

> *"The academic process is the generation of metadata. That's what the academic exercise is. That's what publishing is—it's metadata. So the added value of the faculty member is the knowledge of the metadata." (Participant I, p. 23, fgi1)*

> *"If it were possible in an accreted database to have a way of coding* who *had added* what*, then you could have citations you could point to, and that would be useful." (Participant D, p. 27, fgi1)*

One participant described her frustration with technical staff members who did not understand the difference between the medium and the subject of the image, or how to properly describe the image. In the visual arts, this inability to use metadata properly is a particularly acute problem.

> *"They didn't understand the difference between the medium which was a lithograph on a piece of paper. They were just looking at what the picture was, which was of a cow"* (Participant C, p. 18, fgi1).

The librarian in the focus groups stressed the importance of bringing the library into the process of accessing the images and accompanying text.

> *"This metadata had better be there and be accessible and we better know how to do it or you're going to have a bunch of really frustrated librarians."* (Participant F, p. 23, fgi1)

The issue of metadata use was closely tied to that of recognition by the university and dominated the first focus group session, providing the most controversy. Much to our surprise, many participants stressed this need emphatically by requesting to be quoted in this study. The larger issue of recognition from universities for work with new technologies was discussed at length in the second focus group, and in the MESL follow-up group discussion (Charlottesville, 5/20/97). Some of the comments from the first focus group session included:

> *"If you can't add that [your scholarship] to the database, you disempower the fundamental academic act."* (Participant I, p. 24, fgi1)

> *"We're all pioneers; you don't have your name by it yet, and you become an invisible contributor."* (Participant D, p. 24, fgi1)

> *"It speaks to how much of this accretion metadata is being generated and how many of us pioneer types are actually at the bottom of the hierarchy."* (Participant I, p. 25, fgi1)

> *"Harvesting the crop of the faculty's intellectual efforts"… without us being folded in from day one for the intellectual value of our ideas and effort and research, we have no leverage"…"Suddenly we are like aphids."* (Participant I, p. 27, fgi1)

TRAINING AND TECHNICAL SUPPORT

The issue of technical support and training was raised throughout both sessions. It was generally agreed in both groups that technical support staff are underpaid, undervalued, and difficult to keep. Technical support and training is often project driven (and therefore temporary) rather than actively integrated within a given program. The problem is figuring out what to do after the funds run out for projects.

> *"We found it helpful in History of Art to keep pointing out to the administration that they spend a lot of money on highly-skilled technical support for the science labs and that in History of Art, the images are our science labs, as it were."* (Participant D, p. 16, fgi1)

The challenge of establishing a working relationship with technical support staff was particularly acute. For example, being conversant in "tech speak" requires you to have a certain level of technological savvy to even describe your hardware or software problem, and participants stressed how difficult it can be to diagnose a problem. Similarly, technical support staff rarely manifest any awareness of the field to which their work is contributing. A common scenario found the user being bounced around from one support person to another. The "turf-territorial model" was described as the battle between the users of the systems and the creators or technical support staff, particularly when the creators act as gatekeepers to limit the access privileges of users.

One of the early adopters described problems with incompetent technical support staff. He characterized these problems as his most frustrating.

"If I had trusted what the people told me I couldn't have ever done it...Nobody is willing to let you have access to the tech side or let you talk about design or learn how to do those things." (Participant K, p. 11, fgi2)

In response to these statements, another participant put forth a more positive model.

"What I see in the best cases and sometimes this happens at my institution, not always, is a collaborative model where you've got this knowledge, we've got this knowledge, how can we make this work. It tends to be a matter of person-to-person, not so much an institutional model." (Participant L, p. 11, fgi2)

Similar concerns were expressed in the post-MESL discussion conducted with MESL project coordinators (Charlottesville, 5/20/97). One participant described "tension between academic computing and the libraries (turf issue)" (p. 35, MESL fgi tape 3, 5/97). Another described a failure to communicate between an advisory committee and faculty:

"There was this lack of communication between two worlds with two different agendas. We were looking for help with this project. We weren't looking to be rescued by someone who had all the answers. We were trying to figure out how to formulate the questions." (p. 38 MESL fgi tape 3, 5/97)

Several participants stressed the importance of taking part in the design of systems, learning to solve related problems at the systems level, and understanding the system well enough to do simple troubleshooting at the user level. The reason for acquiring this knowledge is to gain some control over the manner in which systems are deployed, thereby freeing the teacher/user from having always to be dependent upon technical support personnel. Given the short "shelf-life" of most technical support, this could be considered a method of saving time and money. Without any familiarity with various systems, it becomes only a matter of time before users are faced with the dilemma of what can happen when the only person who knows the system leaves for a better paying job.

Some of the participants complained that technicians are not accountable to the people they help, and that it is difficult to build relationships with them. One participant attributed the dilemma of not being able to build relationships between technical support staff and faculty to the centralized computing environment of the university.

"Management systems always follow the technical infrastructure. If you have a distributed computer environment, you have to have a distributed management environment. If you have distributed computing environment, you have to have a distributed support environment. But your functions, authority, responsibility and accountability is out here, and if you have a central computing environment, you can't build relationships." (Participant I, p. 20, fgi1)

Another complaint was technical support staff's lack of subject expertise. The consensus was that technical support people are linear thinkers with an engineering approach, and don't understand the way humanities faculty members think. Participants agreed *"the separation between those who create the things and those who are going to use them was a problem". (Participant D, p. 16, fgi1)*

One proposed solution was to reformulate the role of technical support staff to that of an "educator" passing on knowledge to the users of the system.

"The reason there's so much conflict about technical support is because technical support people are not educators the way they're being used now…The current structure doesn't allow faculty to learn.

It actually displaces the learning off onto the technical people who are ostensibly worse than us."
(Participant I, p. 19, fgi1)

RECOGNITION FROM UNIVERSITIES

There was a strong consensus on the issues of authorship and recognition. As one participant stated succinctly, *"As academics, we need to have our names by things to keep our jobs." (Participant H, p. 24, fgi1)*

Participants noted a lack of recognition on the part of their institutions to offer release time or credit toward tenure for their work with digital images. This was perceived as a formidable barrier to non-tenured teachers. The warning was made clear in both sessions:

> *"Don't get involved with this until you get tenure. It's still not valued." (Participant D, p. 16, fgi1)*

> *"I would never recommend at this point that anyone untenured do what I do. I would advise them against it. And I've seen some people who went ahead and maybe took a hit." (Participant L, p. 14, fgi2)*

> *"most institutions in granting tenure promotions do not place a very high weight on innovation in teaching…the best teacher in the university is always an associate professor. And they never get promoted to full professor." (Participant K, p. 15, fgi2)*

> This same warning was voiced by a participant in the MESL discussion group. *"Tenure is necessary; using digital technologies may count against you" (p. 20, MESL fgi tape 3, 5/97).*

The majority of focus group participants who were teaching with digital images and launching projects with new technologies were, not surprisingly, full professors. Only one art history teacher was not a full professor, and she was understandably concerned with receiving recognition from her university for her pioneering work. One participant recounted how at a meeting he looked around and realized the four people active with new technologies (i.e., teaching on-line) were over 60. As he put it, *"these are the people the system can't hurt and so they do what they want." (Participant K, p. 26, fgi2)*

> *"Institutions need to give credit towards promotion for publishing your activities. Those that are not [full professors] have to do what the institution expects." (Participant J, p. 13, fgi2)*

TEACHING: pioneers in the classroom

> *"In my most visionary moments, I think that it's not just a matter of a tool, but this will change patterns of thought." (Participant L, p. 5, fgi2)*

The term "pioneer" was used in both sessions by participants to describe themselves and the challenges they face as they venture into a new environment and make sense of it for others who may follow.

> *"We are dealing with a fundamentally different kind of image and I think we all belong to a generation of explorers trying to figure out what that dynamism can mean in terms of communication, in terms of teaching." (Participant A, p. 13, fgi1)*

> *"This is the period where we're all pioneers." (Participant D, p. 24, fgi1)*

> *"One of the things is the difference between those of us who are some of the pioneers and gung ho, and how do you bring everyone else along." (Participant L, p. 8, fgi2)*

While participants were eager to share their positive and negative experiences with digital image technology, they could only speculate about what might prompt their colleagues to convert. Participants struggled to isolate even just one or two barriers that impede the use of digital images among a wide body of their colleagues. Instead they described a complicated set of issues ranging from problems in the infrastructure to larger institutional issues. There does not appear to be one single way to encourage widespread acceptance by faculty to use digital images in teaching.

ADVANTAGES OF DIGITAL IMAGE TECHNOLOGY

Faculty perceived many substantial benefits to using digital images and developing digital projects despite numerous obstacles. They offered the following examples of the value of digital images:

> *"It's the ability to take and use a standard tool to extract the structure of the picture (EdgeFind to find the edges, Photoshop to show structural layers)…that qualitative difference is the ability to do repurposing of data. You build something big, then you repurpose a bunch of ways. These have economic value." (Participant I, p. 15, fgi1)*

> *"Now you can give a lecture as though there were 2 slides except you can manipulate the images in different ways, put them up with titles, take the titles away, click on a map, get to a building and so on. And so, it has been an accretion of interest." (Participant E, p. 15, fgi1)*

> *"Using digital images for study purposes reproduces in an easier way what we've been doing forever with study slides and photographs." (Participant E, p. 5, fgi1)*

> *"The students really liked being able to click on an image and that you could have a whole bunch of thumbnails projected at the same time and talk about those in comparison. Or you could bring one up and then make it bigger or compare. There was a lot more flexibility with that." (Participant J, p. 3, fgi2)*

> *"You can do it[study digital images] at your own pace" (Participant L, p. 30, fgi2)*

STUDY IMAGES FOR STUDENTS

Participants with all levels of experience with digital images could appreciate the value of making the images available for students to study:

> *"What's the major thing that art historians want most? They want their students to be able to review the images…and so the digital imagery can provide that." (Participant J, p. 13, fgi2)*

Although the focus groups were centered on faculty, it is important to note that from the perspective of students, remote access to study images is likely to be a tremendous advantage. Students do not have the same access to resources and privileges as faculty. Students lack extensive private collections of books and the extended library loan privileges that are afforded faculty, and may not even have access to the slide library. Faculty have years of experience researching art and have extensive personal knowledge of art. In the best-case scenario, a student is able to visit a work of art in person. In the vast majority of cases, students study works of art from reproductions posted in one location (such as the library), they buy expensive art books, or they compete with other students for the few copies of texts and art books held in the library. Lack of source materials is a primary reason students (and faculty) are limited in their choice of subjects to research.

What difference can digital distribution of images make? Digital distribution of images from a network offers remote access to images for asynchronous use (provided students have the proper

equipment and authorization). But the most important implication of digital image distribution schemes is that more images may eventually be available than any one university can provide.

DISTANCE EDUCATION

Although this was not discussed extensively within the focus groups, several participants described distance-learning projects they had initiated. One participant claimed to have offered the first browser-based course over the Web. Opinions varied about distance education, but participants agreed it's currently a good way to "market" their digital projects to administrators in order to get funding.

> *"If you say you know the end product is really going to be delivered long distance to 12,000 people, instead of 70, then they'll consider investing." (Participant A, p. 18, fgi1)*

SCHOOLS WITHOUT SLIDE LIBRARIES

Some issues that were not extensively addressed within the focus groups merit further consideration:

The schools that could benefit most from digital image distribution (i.e., those without large slide libraries) might not be able to afford the licensing fees nor even have funds to buy the necessary equipment. Thus they might be "priced out" of this new form of image distribution.

However, even in an environment without up-to-date equipment and high-speed networks, alternatives to take advantage of new technologies can be found. In some cases students may digitize images and collect and organize content.

> *"We've digitized about 10,000 images that I own and another 10,000 are in process [partly done by students]. We do two different things with them. One, a full-scale digital course on CD...because most classrooms that you teach in don't have appropriate networks yet that will carry big images. So the CD has worked quite well." (Participant J, p. 2, fgi2)*

IDEAS TO ENCOURAGE FACULTY TO USE DIGITAL IMAGES

The following are a sample of focus group participants' ideas for facilitating the conversion to digital images, focusing on gaining widespread support among faculty.

A hybrid database that tracks both slides and digital images by indicating the location of each (physical or virtual). The presumption is that both technologies will coexist for an indefinite period of time. The challenge is to integrate the existing slide library records with the new digital image records. The digital images themselves do not need to be stored along with the text records; however, the records must point to the location of the image files.

Academic credit for faculty who use new technologies to "publish". Faculty viewed the use of new technologies in scholarly applications, such as online study guides and multimedia projects, as a form of publishing. In order not to jeopardize their academic careers, faculty need to receive credit towards tenure for their efforts. Recognition of the value of this work from professional organizations such as the College Art Association was also deemed important.

Release time for faculty to learn software and develop curriculum and projects. One of the fundamental issues raised in the focus groups was the amount of time required to adapt to a new medium. Even with a technological infrastructure in place, it is clear that the move to digital images would require a substantial time investment for faculty and support staff. This in turn poses many

questions such as: Who will pay for this? Will faculty accustomed to one method of teaching be willing to adapt to another and what is their incentive?

A colleague training program that gives release time credit to faculty members who train others. Faculty members who are seasoned users of digital image technology have a keen understanding of both its pitfalls and potential, and are therefore good candidates for training their colleagues. Although colleagues within the same department often share an understanding of the subject matter, they may feel uncomfortable training each other as it puts one person in a "superior" role.

Demonstrations for colleagues of the uses of digital image technology and tools. Art faculty have exceptional visual acuity. Visual demonstrations of digital image technology are naturally suited to this audience. The biggest challenge of using digital images may be getting started. One solution is to have staff (or outside presenters) give initial technology demonstrations. Even the threat that digital images will supplant slides is not enough to scare faculty into jumping on the bandwagon. It is essential to prove the value of the technology. What can one do with digital images that cannot be done with other media and how will it further one's career?

THE CHALLENGE OF USING NEW TOOLS

The discussion of tools produced a number of comments that ran the gamut from "too difficult to learn" to "we want tools to be able to go beyond emulating slides". Most participants were eager to learn new software provided they were given the release time to do so by their departments. Many types of software were mentioned over the course of the focus groups. Several participants wanted the ability to customize the user interface of any image database they might license or purchase. Several participants had a superior understanding of software and had devoted considerable time to developing projects such as their own software and image databases.

Participants from both sessions found that students with varying levels of experience with the software were equally receptive.

> *"I did not see an age difference in the receptivity to the software. I was very surprised by that. And so it didn't seem to be a matter of a generational split." (Participant L, p. 30, fgi2)*

> *"People who had never logged on, to kids who really knew how to cruise all around the Internet...inside of two weeks, everybody can work everything. And the class consisted of a few key words to the students, no slides, and they had to find the images and the information about the images." (Participant E, p. 6-7, fgi1)*

Demonstrations were suggested as a way to introduce colleagues to the use of digital images to teach. Participants agreed that their colleagues are not eager to be approached on a one-on-one basis, often leading to feelings of being overwhelmed.

> *"I think a lot of the hesitation is at the most basic level of what can you do, what is this, and not having any sense of how to get even from park into first gear…I would have a team of people who would be ready to work with them." (Participant L, p. 22, fgi2)*

> *"A colleague asked if it was difficult to make a website and put pictures on it…not very difficult, I could teach you in 2 hours." (Participant A, p. 14, fgi1)*

> *"Assigning a graduate student to work with a faculty member to get over the fear in the beginning and gradually learn." (Participant J, p. 27, fgi2)*

One participant described a model for a colleague training program. This program gives release-time credit to faculty members who train others to use new technologies.

> *"Our institution is hiring four faculty members for the next year to do training for colleagues. We get half-time off. And I think this is a really good idea because even though I'm further ahead than they are, I know what their problems are. And you can talk on the same level and the same vocabulary as opposed to having somebody who's just a 'techie' who talks real fast and then they feel stupid." (Participant J, p. 22, fgi2)*

> *"They have a certain number of hours with say, somebody from the library, to help them get their bibliography online. A certain number of hours with a student assistant that would program for them. And I think the limitation of hours is excellent because earlier we had done another kind of program in which faculty were given special release time and supposedly people would help them. Well, they ate up all the time. They wanted somebody to just do their thing for them. That doesn't work, it's not economical." (Participant J, p. 23, fgi2)*

> *"They'll push and start to learn some of it themselves because there is a possible payoff then in some release time." (Participant J, p. 23, fgi2)*

> *"Our institution has actually been very good about workshops for how to do it. how to get your course page on the web, how to do email...some are delivered by faculty, some by software people...I think that has been very productive.. They are free and open to anybody, students, faculty." (Participant L, p. 10, fgi2)*

COLLABORATION

The idea of collaboration was interesting because it is contrary to some faculty's tendency to favor autonomy and solo endeavors over collaborative projects. Nonetheless, in the academic world, colleagues are essential as peer reviewers and allies.

"Refereed presentations, refereed Web sites or electronic journals is an important part. Because just putting up your thing on a Web site without your colleagues evaluating it is not going to count. So that is something that perhaps College Art Association could think about -- ways to deal with those kinds of professional issues." (Participant J, p. 14, fgi2)

Whether the collaboration involves a colleague (from the same department or another) or an outside party (museum curator, university administrator or staff member), working in collaboration poses many challenges. Several participants had good experiences with forging alliances with colleagues from other departments to share resources.

> *"A faculty and IT person worked together every single day. Now they come and hold us up like a dog and pony." (Participant I, p. 20, fgi1)*

> *"Get colleagues from other disciplines to form alliances, so administration can get the most bang for it's buck across the entire institution." (Participant J, p. 28, fgi2)*

> *"I've had to find out who's out there with the same problem. Some of the people I work most closely with are in Chemistry, Math, Electrical Engineering...coming together with a team idea gives you clout." (Participant L, p. 28, fgi2)*

Successful collaborations mentioned by participants often occurred across disciplines rather than within the same department. This type of collaboration may be successful because it does not threaten the departmental hierarchy or individual faculty members. Each faculty member remained

the sole "expert" in his or her field. Collaboration can extend to students too; many programs allow students to take courses in other departments.

> *"We use the images in a class that combines students from Art History, Design, and Computer Art. They have to work together to create different kinds of projects. And the technology they use depends on what the hottest ones are that the students are interested in." (Participant J, p. 3, fgi2)*

Into the Future

This study examined what it will take for faculty to adopt digital image technology on a wider scale. Following is a brief summary of the factors we found to be most critical:

What do faculty need in order to teach with digital images?

- ***Faculty need incentives.*** Department administrators and institutions must offer incentives to encourage faculty to use digital images.
- ***The conversion process must be quicker and easier to accomplish.*** Assistance must be provided to guide faculty, staff, and administrators through this time-consuming process.
- ***Classrooms and labs must be adequately equipped.*** Fully equipped facilities must be available for faculty to teach with digital images and for students to access these images.
- ***Faculty need tools.*** Faculty members require different levels of tools to work with images and descriptive data.
- ***Technical support must be ongoing.*** Training and technical support must be integrated within the program.
- ***Universities must value this work.*** Faculty must be recognized for their work with digital image technology on an academic level and professional level.

What features must an image database include?

- ***It needs a critical mass of the right images.*** Each institution desires different images depending on the curriculum. Moreover, faculty within the same institution may use different images to teach the same class.
- ***It needs to integrate with the local system.*** Visual resource staff must be able to add images and records from their own collection to any database provided.
- ***It needs to be easy to use and flexible.*** The interface should be user friendly and adaptable to a variety of users.
- ***It needs to permit customization at the user's end.*** The database and interface must be configurable to the needs of the local users.
- ***Faculty must be able to add text data.*** Faculty must be able to add descriptive data to the database, and there should be a mechanism to track individual faculty contributions.
- ***Text data should flow in both directions.*** There should be a mechanism to permit faculty to contribute their scholarship to the central database and data providers (e.g., museum curators). This would open a mutually beneficial dialog between subject experts.

Conclusion

Slides and digital images are not mutually exclusive. They will undoubtedly coexist for quite some time regardless of whether one or both eventually become obsolete. The model offered by MESL for acquiring digital images was that of site licensing, but digital image technology is not restricted to this model. It will continue to exist whether or not site licensing is successful.

The site-licensing model has been emphasized due to its recent emergence as a viable means of distribution. However there is a wider perspective, and that is the potential of digital image technology to transform the way art history is taught: from a *lecture* mode to a *participatory* mode. Our focus group participants endeavored to articulate the potential of digital image technology, but they have already proven its tremendous potential with their success in creating distance-learning environments, multimedia projects, animated reconstructions, study guides, and online course materials.