3 Building a Writing-Intensive Multimedia Curriculum

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The Mellon Multimedia Curriculum Development Project

Spelman College's Writing Program is currently engaged in a three-year curriculum development project on teaching communicative skills with technology. In January of 1996, Spelman, a historically black college for women, received a generous Mellon Foundation Grant of $400,000 to develop fifteen new courses in three phases. The grant, entitled Using Technology to Teach Writing and Communication Across the Curriculum, targets faculty who teach writing-intensive courses in the arts, humanities, and social sciences. This project uses writing-across-the-curriculum (WAC) collaborative efforts as a basis for creating communication-intensive courses taught in the computer classroom. The curriculum development efforts are housed in the Writing Center and have the support of the Writing Program director, assistant director, multimedia project coordinator, and five student assistants.[1] We focus on intensive faculty training with multimedia software and hardware, including Web authoring software, with the end goal of delivering the newly acquired expertise to students in a particular course. This focus on multimedia and Web authoring was a result of a very simple observation. In the past Spelman's communication efforts in WAC courses were largely text based. However, professional writing in most fields has become a combination of image and word, and publishing, increasingly, includes online delivery of the final product on CD or over the World Wide Web (Lanham 1993). Because multimedia combines verbal, visual, and auditory forms of communication, these projects teach complex writing and planning skills while reinforcing skills of visual literacy. Traditional disciplines have expanded their scholarly interests and delivery mechanisms to include many new media forms: still images, sound, video, and animation to name a few. As a result we built into the grant support for extensive training for five faculty members each

year, release time for course development, and five multimedia development workstations. Although we are still in the beginning stages, we believe our project is already helping teachers help students perform meaningful communicative, writing, and design work in the multimedia computer classroom.

This program builds directly upon our Comprehensive Writing Program (CWP), which has enjoyed great success at Spelman since 1979.[2] A key part of our program is working regularly with faculty to develop writing intensive courses in all major departments. The electronic writing classroom, supported by the Writing Center and our campus computing department, has traditionally been a resource for some English and writing-intensive courses on campus. The Mellon Grant is now allowing us to bring more of those courses into the computer classroom in sophisticated ways. Faculty bring us their expertise in what is already an innovative and diverse liberal arts curriculum. We begin with a traditional syllabus from the disciplines, but in the course revision, the instructor collaborates with the CWP staff to develop writing-to-learn assignments and projects that incorporate electronic communication and multimedia technology. Our first multimedia courses include Latin American Art; Oral Narratives; and Race, Class, and Gender in Brazil. Each instructor begins the project with a plan to integrate frequent writing and electronic communication, as well as educational multimedia and Web-based academic research, into their courses. These faculty are, in most cases, novices with both the new writing technologies and the multimedia technologies, though most have some experience with browsers for the World Wide Web. We thus face dual challenges: the normal challenges involved in WAC, which require ongoing training, consultation and course revision within multiple learning contexts, and the added challenge of mastering new technology and communicative learning activities made possible by the computer classroom. Not surprisingly, our colleagues are meeting these challenges with enthusiasm and success as they teach their courses in what is a completely new learning environment. As Arturo Lindsay remarks about his Latin American Art course: "This has been the most challenging and the most rewarding teaching experience I've had in a long time. I can see the potential of continuing to teach in this classroom. I know I'm getting much better work out of my students." Their immersion in new communications technologies and new media helps teachers imagine better ways to foster collaborative learning and ongoing electronic writing and communication activities in their courses.

At the same time, we recognized early on the difficulty and discomfort of delivering courses in a high-tech classroom for the first time. Few of our faculty had experience with the Macintosh operating system, or with protocols for teaching in a networked computer classroom. The training itself took much longer than we expected: we had to offer additional workshops and one-to-one instruction to help faculty master very complex software programs. While the

grant described a one-year cycle for course development, in reality faculty members needed up to twice as long to develop and deliver their multimedia course. We also found that the teachers required a great deal of support while teaching their classes. In effect, each course required co-teaching, constant technical support, and an extensive time commitment from the CWP staff. The teachers themselves had to commit much more time and effort than they anticipated, and, sometimes, this commitment was impossible to combine with a three-course teaching load and other college demands. Students also expressed a need for more documentation, examples, and demonstration of computer techniques and software. These problems forced us to reevaluate our faculty training, redesign our support procedures for these classes, and develop more materials for the students.

In the first phase of the Mellon Project we had to consider the following challenges:

1. How do we effectively engage veteran teachers in pedagogies for an electronic writing classroom?
2. What faculty training paradigm works best?
3. How does a teacher best incorporate electronic communications into writing intensive classes?
4. Which classroom techniques and assignments work best for the students?

Engaging the Faculty

The grant itself offers many incentives to engage faculty in intensive technical training and course revision. We provide stipends for summer workshops, release time from teaching one course, and funds for educational multimedia titles suitable to the course being offered. The grant provides faculty travel money to attend an educational technology seminar or conference, or to conduct a research trip related to the course. Faculty use a high-end multimedia development computer and peripherals through the term of their "mini-grant," and have access to our other Writing Center and Computer Classroom resources, such as a file server and Web server.[3] Most important, the staff, faculty, consultants, and student assistants associated with the grant are all available for ongoing support and training. This support infrastructure was anticipated in advance and put into place by the Writing Center the year before the Mellon project began. Our Office of Computing and Information Technology (CIT) provided the groundwork, the ongoing technical support, and the funding for student assistants in the Writing Center's computer facilities. In collaboration with CIT, we are building a network of on-campus support personnel that includes academic computing staff, students, and veterans of our project.

Before beginning the faculty training, we needed to raise the awareness of the potentials for teaching which the networked multimedia computer classroom has made available. The first step was to hold seminars and workshops where educators who have already successfully used computers in teaching could share their insights and techniques with a wide and self-selected audience of Spelman faculty. We found that the strongest response came from faculty already interested in WAC and other Writing Program initiatives. Faculty who had already explored cross-disciplinary writing shared our idea that using computers for communications-intensive courses was a logical enhancement of WAC techniques. In many ways, this self-selection of project candidates facilitated the first phase of the project since we shared learning experiences in the past and had common points of reference in the WAC workshops.

The next important step was to solicit from faculty their ideas of how best to incorporate electronic writing into their traditional course curriculum. This was, in fact, a major part of the selection criteria for the first group of faculty brought into the project. The concept was that faculty should posit ways in which the use of the networked multimedia computer classroom could ideally function as a teaching and learning enhancement vehicle for their respective courses. The faculty submitted course proposals that included specific strategies for increasing students' technological savvy and communication skills while interacting with a number of computer resources for research, writing, oral and electronic communications, and professional development. The successful proposals included development plans in which students worked toward a final project which incorporated specific electronic and multimedia communications activities that resulted in a tangible, educational project. From the various submissions, the Writing Program Committee selected the most promising course ideas based on the given criteria.[4] These proposals were then revised into syllabi during the training and helped us to select workshop topics and the consultants we would hire to deliver some of the seminars.[5] Successful proposals were chosen from the arts, humanities, and social sciences.

Thus, at this juncture we were able to begin to resolve what directions our training should take and how our faculty were going to use the available resources. Significantly, our early interaction with faculty dealt more with their concerns about integrating computer classroom teaching with their traditional curriculum into a pedagogically effective whole than it did with issues of technical skill. This meant that we attempted to weight the training workshops in favor of the development of teaching modalities best suited to the computer classroom rather than specific computer skills. Instead of setting off into totally new pedagogical models, we found that our faculty conceived of the actual classroom use of electronic communications along the lines of familiar writing-intensive paradigms. Some recurring motifs included the use of microthemes to generate longer presentations, sequencing of assignments toward a long research

project, and creating assignments that foster discipline-specific research skills.

These conceptions about how to best integrate the use of new technology and traditional classroom techniques allowed us the freedom to select specific points during each course in which to teach the necessary software and hardware skills to the students. We (the CWP staff and faculty, and student peer assistants) delivered short lessons in technology with the course professor and allowed for immediate hands-on practice by students. We usually took a different student through each procedure while explaining the techniques and allowed the others to watch that student's steps on an overhead projector. Staff and student assistants provided further support during open lab hours so that all students could get substantial practice in the new computer skills. These student assistants were trained by our staff in the same techniques, and with the same programs being taught to the faculty. Some students developed technical proficiency more quickly and helped others with class projects.

Faculty Workshop Paradigms

Our workshop paradigm was selected from two possible models. The first model is based directly on professional multimedia and Internet courses offered by the Georgia Institute of Technology's School of Literature, Communication and Culture and by its Center for NewMedia Education.[6] Their model includes an intensive and condensed project-oriented training program given in multiple-day or quarter-long courses. Its primary goal is to instruct professionals in the use of specific software and hardware, as well as theory and techniques for graphic and multimedia design.[7] The Multimedia Production Workshop offered by the Center then brings all these skills together in the form of a coherent project.[8]

The other model is based on spaced and incremental workshops which can be delivered over the entire school year before and while teachers are actually offering their new courses. This model allows for a flexible integration of classroom experience with the technology skills being learned, and allows for a more gradual process of learning the technology. Because skills are introduced gradually, students and the teacher can provide feedback while the classroom's technology lessons are implemented. This interactive process allows for a more pedagogically aware workshop environment than does the former model. We chose this latter model during the first phase of our project in large part because of the intrusion of the Atlanta Olympics on our summer schedule, but specifically because we thought it meshed better with the skills of the particular faculty members and gave them a longer period of time to collaborate with us on pedagogical modalities suited to the networked multimedia computer classroom. We had to plan six months in advance to design and deliver this extended series of workshops.

We held workshops for faculty development over the entire academic year, usually meeting every two weeks. We hoped that this would fit best into busy faculty schedules and yet provide a stable platform for faculty to acquire an in-depth knowledge of the new technology. This decision allowed us the freedom to schedule workshops in the semester before and during the teaching of the computer classroom courses. It also facilitated our ability to intervene in the individual classes at select moments and assist the faculty with technical issues in scanning, presentation software, Web page design, and so on.

For many workshops, specifically for the multimedia tools workshops, we hired outside consultants as expert seminar leaders. For our consultants, we collaborated directly with Georgia Tech's Information, Design and Technology Program by identifying their MA students with technical expertise and offering them a valuable teaching experience. We also hired several course teachers from their NewMedia Education program to consult on our project, to deliver workshops, and to demonstrate their own multimedia applications. These consultants led many of the hands-on workshop sessions while we aided in the delivery and gave individual instruction during workshop sessions. Workshops gave faculty an overview of multimedia development and then offered hands-on practice with software tools and peripherals. Workshop topics were broken down into specific process or tools segments, and we gave two workshops on each topic. Each workshop lasted no more than three hours and was offered when all the selected faculty could attend. The workshops always emphasized how the technology could be used in specific courses for teaching and for student participation in communicative processes. Our workshop topics included the following:

Protocols for file-sharing and completing assignments in the networked computer classroom

Introduction to multimedia hardware and software, emphasizing educational applications

How to conduct Web research and to use the Georgia On-line Library Learning tools

Using multimedia software to enhance oral presentations

Capturing and working with digital image resources

Capturing and working with digital audio resources

Introduction to digital video editing

Web design tools and principles

These workshops added a considerable workload to the project faculty. However, we were pleased with the skills the teachers acquired and could pass on to their students. The workshops were small, with no more than six faculty learn-

ers who worked with an expert leader and two floating assistants, usually ourselves and a student assistant who had at least intermediate knowledge of the software and peripheral devices. The floaters could circulate around the room and intervene whenever a learner became stalled, could encourage individual exploration, or could relate how certain multimedia or communications software might be used in specific classroom situations. The small group dynamics made possible by this concentration of learners and leaders contributed greatly to a successful workshop.

The normal introductory workshop in each topic area consisted of an expert presentation on the topic, followed by hands-on exercises. The subsequent workshop was entirely hands-on and encouraged individual exploration and discussions about potential pedagogical uses for the technology. The project faculty always inquired as to the best classroom communications or research uses for each topic, so we and our consultants presented them with research and demonstrations of pedagogical uses for each topic. We often collaborated about the pedagogical issues for each course or discipline during these workshops and focused on follow-up that would allow students to complete a particular assignment using the software tool. For example, our digital imaging workshops allowed Arturo Lindsay to design a class assignment in which his students selected works to support their interpretive thesis about particular Latino/Latina artists. They then scanned in artwork, used graphic software to enhance or select significant detail, and finally incorporated their work into a slide presentation. Rarely was a workshop purely a technical learning exercise.

Unfortunately, scheduling workshops that all the project faculty could attend was sometimes impossible during the school year. Often project faculty had to be absent for conferences, colloquia, personal emergencies, and so on. Therefore, some people were occasionally left behind and had to meet with us individually to catch up with the rest of the group. Fortunately, we had staff available for direct support of the project faculty. In these instances, individual mentoring became essential to achieve a common skill level while addressing different learning curves. These sessions ended up being effective for implementing computer communications pedagogy into the classroom because issues of specific course content could be examined in detail. Since we had often observed the classes in progress, team taught certain electronic communications skills with the course professors, and provided support to students outside of class, we became collaborators on course design. As we got to know the course content and teaching styles of the faculty, we were able to suggest ways to combine course content with new technology. This process also allowed for very productive interactions on classroom activities between faculty and students.

We found that mentoring allowed the advantages of being direct and pointed toward issues of immediate curricular concern. It was effective for solving indi-

vidual teachers' needs and suiting their styles, and could be applied immediately and enthusiastically with strong and favorable student reactions. Unfortunately, because we found solutions for each teacher's needs on a one-to-one basis, these ideas were not always effectively communicated to other teachers with similar problems. As we queried the entire group, we found that they needed a better forum for sharing successful strategies. We anticipate including a regular face-to-face forum to discuss ongoing classroom issues. One person suggested that some of the workshops given during the semester become even more pedagogically oriented and less technically oriented than now. Another, complementary, suggestion would allow for an electronic discussion space to explore classroom issues before and as they arise in teaching situations.

In retrospect, we have concluded that in our second phase, the next group of faculty should have both workshop paradigms in order to more completely develop their skills. The intensive project-oriented model is best for imparting and practicing computer skills, while the incremental workshops and mentoring are best for developing and refining computer classroom teaching modalities. The project-oriented model allows intensive hands-on experience with the end project as motivation for using the various software; it is best delivered during summer training sessions and can draw upon the skills of outside experts to build an understanding of what can be done in a multimedia environment. Subsequent workshops during the semester can be directed more towards implementation, i.e., how to teach using computer classroom techniques and how to teach students to use multimedia authoring in their own projects. Moreover, faculty can incorporate the techniques learned during actual in-class exercises and ideas generated during mentoring sessions, thereby overcoming the unevenness of the learning process.

Incorporating Electronic Communications into the Classroom

The courses that feature multimedia for our Mellon grant are typically writing- and research-intensive junior and senior level courses. They incorporate, for the first time, complete immersion into the networked computer environment of all assignments and student work, with an emphasis on Web research. These courses all center on the electronic teaching environment of our computer writing classroom. Starting from the traditional lecture-discussion teaching modes, we encourage interactive and collaborative pedagogies as a basis for all classroom activity. Faculty transpose traditional lecture notes and discussion materials into interactive activities or graphical multimedia presentations that can serve as models for their students' presentations. We also train teachers to use synchronous communication programs, electronic conferencing, and networked file-sharing to form the basis of their assignments, collaborations, and written exchanges between students.

Perhaps the most elementary problem when incorporating inherently interactive technology into the classroom is to overcome the instinct veteran faculty have to lecture. The layout of our classroom helps to subdue this instinct because it is physically de-centered. Our networked classroom consists of seven carrels each with three computer stations that face into each other. We limit the course size to twenty-one students, one per workstation, but many upper level classes are smaller. There is a "teacher's" station at one end of the room, but it has been rarely used during teaching sessions. Projection is usually done from a computer in the center of the room. All our teachers seem to be drawn into closer proximity with the students by this classroom design, and usually take a seat at one of the carrels. There is no obvious focal point in our classroom, except when the portable projector shines images or lessons onto a portable screen, so the teacher tends to become a participant rather than a dominant figure on a podium. The de-centered classroom forced our instructors to change their classroom delivery and personae. While several teachers embraced this new style, others resisted the de-centering of their role as instructor.

The teachers all responded to this classroom with different modifications of their styles of teaching. Rick Langhorst, teaching Spanish Composition 307, found that he tended to circulate more and that students tended to initiate Spanish conversations with each other and engage in spontaneous collaboration during writing exercises. Steven Knadler, a veteran in the computer classroom who teaches several English composition courses, used synchronous collaboration software to generate oral and electronic discussions on network-delivered exercises. Some faculty, notably Dalila DeSousa, teaching Senior Seminar in History for the first time in a computer classroom, and Geneva Baxter, who is a veteran computer classroom English composition instructor, decided to split their class time between the traditional lecture/discussion mode in a "standard" classroom and the computer classroom. They used the computers for specific in-class activities such as Web research, synchronous conferencing, and multimedia presentations.

The art history course taught by Arturo Lindsay was so well suited to the visual presentation capabilities of the computer classroom that it simply highlighted the interactive possibilities of a lecture-discussion course. Many classes centered around images and slide shows on a large screen or from shared files on students' computer desktops. Arturo used the network to set up an electronic bulletin board where he posted his lecture notes, critical essays, and information of interest such as art show notices. Arturo's students also posted their questions and observations on this bulletin board. During class discussions and in-class writing assignments, the class often connected to the bulletin board to compare notes, to develop further ideas, or to begin inventing their own analyses of course topics. The success of this bulletin board has encouraged Arturo to make it a hypertext database that incorporates an index and clickable hotlinks to additional references.

One important pedagogical adjustment was universal to the computer classroom courses, however, and that was the need to deliver discrete instructional modules on the use of computer tools and techniques during class time. These are given as short, partial class presentations that usually combine a course assignment with a new software tool. While different faculty chose to focus on different electronic vehicles for the major student projects, there was a shared need to instruct students in basics such as the networked computer classroom protocols, cross-platform compatibility issues, digital capture of images and sound, and Web Page authoring programs. For these skills we developed an in-class workshop model very similar to the tool-specific incremental faculty workshops. Initially, teachers scheduled very little class time for technical instruction. This approach to integrating computer lessons into the course content inspired the teachers to allot more time to instruct students on multimedia and communications in the computer classroom.

We always try to incorporate the specific computer tools or skills we are teaching into an ongoing class assignment. For instance, an early Web research session will have the students search for specific course-related topics. We provide students with a set of Web bookmarks and some URLs for them to begin their research. From there they are encouraged to follow hyperlinks to other sites and to save their own bookmarks to a network file for other students to look at later. They are later shown how to save images, text, and sound so that they can begin to develop Web pages and/or multimedia projects of their own. They are also asked to define technical terms which are common to the software they are using, thus gaining confidence in their competence in a world of abstruse computer jargon and advanced technology. All of these early skills contribute to multimedia projects and Web sites that are completed later in the semester.

The popularity and effectiveness of their students' computer learning motivated the teachers as well to become more independent in teaching the technology because it related directly to class assignments and learning. During the first class meetings, computer classroom teachers did little or none of the technical teaching. As the semester wore on, they no longer saw computer pedagogy as something that belonged to the "expert" staff, but as a set of skills that they themselves increasingly possessed. They occasionally gave technical instruction and developed a considerable amount of autonomy in the computer classroom. Teachers mastered certain routine collaborative writing activities over the electronic network. The more complex goals of multimedia development, however, still relied upon our expert intervention. We expected the teachers to develop these skills much earlier in the semester, and found that they persisted in needing significant support both in and out of the classroom.

To address these needs, we often incorporated the same samples and documentation in the faculty training and classroom teaching environments. This crossover gambit made faculty familiar and comfortable with the tools and teach-

ing techniques. Because they had been through the same training, they could anticipate their students' interests and difficulties. Teachers also found that they could use their own class time to explore and develop their skills. In general, we believe short, frequent instruction facilitated the incremental learning of computer tools and techniques because we could focus on what worked well and what could be improved. Instead of having details buried in the expanse of a long lecture, the details became one subject of the class itself—problems to be discussed and resolved, with the solutions incorporated into future lessons.

As students participated in these sessions, they looked forward to learning more about the world of computing itself and were proud to author their own multimedia projects. Since there was no delay between the acquisition of software tools and the production of student work, they got to work immediately and enthusiastically. Students rarely missed sessions they knew were going to include a computer lesson, perhaps because they quickly learned the difficulty of catching up. We also believe that the high attendance rates occurred because students enjoyed these sessions and felt increased confidence in their expertise. Students not only had the opportunity to engage in electronic collaboration with the newest technologies, but, for the first time at Spelman, they became involved in the development of multimedia and Web resources that reflect their ideas and research in a particular area of study. It fostered a sense of themselves as intellectuals and as professional communicators who are looking toward the future, whatever their career goals may be.[9]

Most students have also tended to become less intimidated by the more daunting technical aspects of multimedia and electronic communications as their familiarity increased. The collaborative work and synchronous communications software, as well as their ability to record images and sound of their own choosing, were immediately and overwhelmingly popular with students. They loved the ability to instantly communicate with each other, not only in electronically mediated words, but over distances and with pictures and sounds they can edit and manipulate. Students from "regular classes" often come in with a computer classroom student to learn how to use the tools our students have begun to master. "Our" students have become electronic communications mentors across the campus.

Multimedia Course Projects

Each course was designed to feature a culminating multimedia project that would allow students to practice and apply the technical skills developed over the semester. These multimedia projects were developed over the semester as specific writing assignments that were then translated into multimedia projects. For example, in the Spanish Composition course, students explored research questions throughout the semester on six Spanish-speaking women artists: Isabel

Allende, Rigoberta Menchu, Gabriela Mistral, Nancy Morejon, Celia Cruz, and Eva Peron. Early in the semester the students wrote numerous microthemes in Spanish based upon research questions that they were then expected to explore via the Web.[10] Conducting primary research using a World Wide Web browser led them to numerous university and library sources, including Spanish-language Web sites.[11] This experiment gave students essential practice and skills in electronic academic research, while also exposing them to numerous possibilities for Web site design and organization. Finally, they broke into groups in the final third of the semester and combined their research to create Web pages on each woman artist. Students developed these multimedia projects within the specific learning and communicative context of advanced Spanish composition.

Multimedia presentations can also be a continual part of the class assignments, but take different formats at different stages, building into a final project. In the Latin American Art History course, students used multimedia presentation tools, scanners, and slide shows on an overhead LCD projector to give numerous talks to the class about their ongoing research on one particular artist. They began with a slide show talk about a particular country using maps and demographic material found on the Web and CD-ROM resources. The goal of this assignment was to show the diversity of Latin American and Latino/Latina cultures. Students then created interactive slide presentations that presented a thesis for research, an outline of the argument, and several key works by the artist. This kind of exploratory multimedia presentation, where the audience views a kind of performance, can be described as a communicative event between a writer and an audience that is specifically designed to provoke dialogue and collaboration (Balsamo and Hocks).[12] During these performances, the entire class evaluated the research plan in context of the assignment, analyzed the images on screen, and collaborated on research resources during these presentations. These students combined their presentations with text into a long multimedia research essay that included images, text, slides, and a Web site on Latin American Art.[13]

We are currently in the first stage of implementing students' projects in these new courses, in which students are authoring multimedia presentations for the classroom and the World Wide Web. In the next stage, students will be working in small groups to create interactive video and Web-based projects. Students are now beginning course projects in which they create short videos with sound using sophisticated tools for digital video and sound editing. These projects are designed either as stand-alone interactive presentations or interactive Web sites. We teach the teachers and the students writing and design processes that involve intensive collaboration in the group projects. Modeling processes that are widely used in multimedia design companies, students assume the roles of project director, navigation expert, graphics expert, and content expert. The project di-

rector runs the initial planning meetings, fields ideas and obtains a consensus about what project to undertake. The group then co-authors a project description and presents it to the instructor for commentary. The navigation person leads the group in storyboard development, in which they draw each screen on paper and describe what elements will be included. These storyboards are submitted to the instructor for feedback and approval. The group then begins to develop a prototype of the project using a multimedia authoring tool. The content person conducts research and writes scripts, while the graphics person develops media and collects visual elements. The project director works on editing the video and sound resources while the navigation person creates the screen's interactive elements (links or buttons) in the design software tool. By the end, of course, different group members all help one another to complete this mini version. The assignment ends with an oral presentation of the finished project to the class and a critique of each other's projects.

Because of increasing interest and publicity among the students, many projects using this model are being planned outside of the classroom as well. One group of students from the Latin American Art course will edit interviews of local and visiting artists. Another group of students, under the mentorship of faculty participant Kimberly-Wallace Sanders in Women's Studies, plans to research our Spelman archives and interview Spelman alumnae. Our Bambara Writers group plans to publish the student-edited and authored Women's Center Newsletter on a Web site.[14] Another group of seniors plans to edit and publish a student journal of research essays in math and science. With these efforts, our Web site will move beyond the courses to showcase student work broadly and bring more opportunity for dialogue and exchange between Spelman and other campuses.

Recommendations

Based on the experiences of our first year to develop an interdisciplinary curriculum for electronic communications, we can recommend paths to follow and pitfalls to avoid.

The most important recommendation we can offer is to organize your effort well in advance. A year of planning is a good yardstick, especially if you need to procure hardware and software to get your computer classroom into operation. The budget needs to be ample and carefully managed to account for equipment, software licenses, staff salaries, consultant fees, training materials, and repairs. Housing the curriculum project in an established academic center or department offers additional stability and support for your efforts. Building upon other faculty development programs works very well. Workshops need to be planned well in advance and specific goals set for each workshop series. Remember that knowledge of the tools is wasted without an equal knowledge of the pedagogical modalities which this technology makes possible.

To be successful, innovative computer communications course development should also have a well-publicized outreach program across the campus. Advertise technology and pedagogical seminars across the campus to get as much input as you can before and during your development initiatives. By raising the profile of your initiative, you will be able to get wider support than you expect. These seminars also provide a good showcase for evaluating the potential long-term consultants you may be considering for your program of faculty development workshops. In one case, we brought in a potential consultant, Adam Arrowood from the Georgia Tech Office of Information Technology, and had him deliver a seminar to all interested faculty on Web page design. His seminar gave examples and explanations of how to use Web pages in conjunction with a convening class and looked forward to the technical innovations that would make the Internet an ever more powerful and diverse medium of communications. Themes from his seminar figured prominently in course proposals we received later, and therefore also in our workshop planning and material. Several faculty members asked if he could be available as a consultant in the future. We immediately recognized that he was to be a valuable long-term consultant, and have subsequently received much support and training from him and contacts to other good consultants. This example shows us that the strengths of our experts will play a large role in the total worth of our curriculum development project.

Besides careful selection of your consultants, you need to arrange for direct support on campus. Keep in mind, when organizing a curriculum and skills development program, that you cannot leave the equipment to take care of itself. It is imperative that the physical infrastructure be fully operative and tested before you start the formal project. It often takes many months to get a networked multimedia classroom up and running, so plan for an extended break-in time. Buy all of the software and peripherals in advance so that you won't have to learn as you go. Most of all, have some alternate plans to fall back on should key technology not work as you expect.

All of this takes a robust budget to initiate and creative planning to accomplish. Identify an appropriate educational technology grant to jump-start your program and provide seed money for future development. Your basic start-up requirements include: project leadership and staff, up-to-date equipment, consultants, and a great deal of ongoing technical support. It is best to have somebody on campus who can be dedicated to supporting the technical needs of your project quickly and reliably. If possible, this support should come under the direct supervision of your group.

Once the grant period ends, you will have to creatively restructure your program. You will need to establish, with the campus administration, an ample operating budget for repairs, supplies, and educational resources. Collaborative efforts with campus computing, established writing or technology centers, and

key departments will help build a sustainable project and permanent budget. To maintain an ongoing, trained staff you can set up formal internships for undergraduate and graduate students, offer academic credit for classroom assistants, and set up exchanges with other schools that have complementary resources. Veterans of the original project can provide expertise and advice to future faculty and students.

A final recommendation is to avoid inflated expectations, especially early in your program. It takes time to get the physical infrastructure to work well and it takes time to work out the training and pedagogical paradigms that will work best in your particular circumstances. We highly recommend a phased program such as ours because it gives you room to grow, evaluate, and improve. A phased-in implementation of your program, lasting over a period of years, makes it easier to anticipate and implement changes to your original proposals. The preliminary phase should consist of campus outreach and profile building for your program while you recruit faculty, select consultant experts, and build up your infrastructure. Begin your project as an exploration into the uses of multiple educational and communications media while you and your faculty develop the pedagogical modalities best suited to this environment. Accept that in the first phase you are going to make mistakes. Sometimes faculty will feel overwhelmed by the technology and the program staff will need to take a greater mentoring role than expected, even in the course delivery. Sometimes an entire class will not develop multimedia projects as sophisticated or as complete as expected. For those directing the project, these are signposts which indicate to you ways in which you can refine your training and redefine your goals throughout the project. It is important that such events are not perceived as failures, but valuable learning experiences for students and faculty alike.

Notes

1. For an example of electronic communications activities that build upon a WAC program and are housed in the Writing Center, see Palmquist et al. 1995.

2. See Royster 1992 for a description of the history and success of Spelman's Comprehensive Writing Program.

3. HARDWARE: The faculty workstations consisted of five Apple Macintosh 8500/120 computers with 60 megs of RAM and Applevision 1710 AV monitors. Five Zip drives are used for portable storage. The classroom computers are twenty-two Macintosh Performa 6214 PCs with 24 megs of RAM each. Everything is connected via a 10 base T Ethernet network with a Macintosh Server 8150/110 with 80 megs of RAM and a 4 gig external hard drive. We have a separate Macintosh 8150/110 Web Server. Peripheral equipment includes two Apple Color OneScanners, a Marantz PMD 222 cassette recorder for professional sound capture, and a QuickCam digital camera. We have an Apple Color LaserWriter 12/600 PS and three Apple LaserWriter 16/600 PS printers. A 8500/120 computer is used as our digital video capture station and has an APS 4 gig

Raid array connected by a Qlogic fast and wide scsi card for fast playthrough. The VHS video editor is a Panasonic Ag-1980. An Epson ELP 3000 portable projector is used for instruction and multimedia presentations.

SOFTWARE: The most widely used software included Claris Works 4.0, Microsoft Office 4.2a (Word 6, Excel 5, and PowerPoint), Adobe Photoshop 3.0.5, Adobe Pagemaker 6.0, Adobe Premiere 4.0.1, Adobe Illustrator 6.0, Adobe PageMill 2.0, Macromedia Freehand 5.5, Macromedia SoundEdit 16, Daedalus 1.3.6, and Aspects 1.5.2.

4. This ongoing advisory committee acts as an interdisciplinary body that steers and advises the Writing Program. It includes Jann Primus, Biology; Fred Bowers, Mathematics; Freddye Hill, Academic Dean; Rick Langhorst, Foreign Languages; Arturo Lindsay, Art; Madeline Picciotto, English; Dalila DeSousa Sheppard, History; Bruce Wade, Sociology; Newtona Johnson, Writing Center; and Mary Hocks, English.

5. All revised multimedia course syllabi are available on our Web site: http://www.wcenter.spelman.edu.

6. See the Web site for the School of Literature, Communication and Culture: http://www.lcc.gatech.edu.

7. For more information on the theory and practice of graphic and multimedia design, see Kojima 1996; Kristof and Satran 1995; Lopuck 1996; Miller and Zaucha 1995; Mok 1996; Nielsen 1995; Siegel 1996; Weinman 1996; and Weinman 1997. For an excellent bibliography, see Terry Harpold's "Resources for Multimedia Designers" Web site at http://www.lcc.gatech.edu/faculty/harpold/resources/mm.html.

8. See the Web site for the Center for NewMedia Education: http://www.newmedia-coned.gatech.edu.

9. We have systematic evaluations and case studies of our courses planned to test these assumptions.

10. We teach the use of microthemes (short, highly focused essays that reinforce several cognitive strategies) and sequenced assignments in our Faculty Seminars. See Bean et al. 1982 for the classic model of microthemes.

11. Web sites for research included the following: Directorio Global Net en Espanol <http://www.dirglobal.net/>; Latin American and Iberian Studies <http://www.library.ucbs.edu/subj/lais.html>; Latin American Network Information Center <http://lanic.utexas.edu/>; Web Museum of Latin America <http://museos.web.com.mx/>; Latin American Library <http://www.tulane.edu/~latinlib/lalhome.html>; World Wide Art Resources <http://wwar.world-arts-resources.com/index.html>.

12. See also Joyce's description (1988) of "exploratory hypertexts" as a performance to an audience.

13. The class Web sites and selected student projects, with their permission, can be viewed on our Writing Center Web site throughout our project. Our address is http://www.wcenter.spelman.edu/.

14. The Bambara Writers Group is a student group for aspiring writer/scholars that sponsors eminent visiting writers, usually women of African descent.

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