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Multimedia Labs as Content Incubators

Abstract

The New Media Consortium, in its 2011 Horizon Report, argues that digital media literacy continues its rise in importance as a key skill in every profession, but that the skills aren't yet well defined or well taught. That claim is certainly supported by my experience as both a digital humanities professor and new media consultant. In this article, I'll discuss briefly why a multimedia lab can help address the issue, then point out a few of the policies we've used and grants we've found to support our lab, the Iowa State University Studio for New Media. One challenge of teaching new media is a widespread, pervasive belief in the myth of "digital natives" vs. "digital immigrants." This stereotype, articulated

by writers such as Marc Prensky in 2002, argues that young people who have been raised immersed in digital media ("natives") are naturally more comfortable and more capable with new media technologies than older users ("immigrants") to the digital terrain. In my experience, this myth hampers both teaching and learning. Students use it to enable mediocre work— students often have a haphazard understanding of new media and sometimes assume their work is good before it is. Faculty and senior colleagues, on the other hand, often use the myth to justify their own limited digital skills and to justify not teaching digital technologies to students (who presumably already know them).

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Multimedia Labs as

By GEOFFREY SAUER | *Senior Member*

THE NEW MEDIA CONSORTIUM, in its 2011 *Horizon Report*, argues that digital media literacy continues its rise in importance as a key skill in every profession, but that the skills aren't yet well defined or well taught (3). That claim is certainly supported by my experience as both a digital humanities professor and new media consultant. In this article, I'll discuss briefly why a multimedia lab can help address the issue, then point out a few of the policies we've used and grants we've found to support our lab, the Iowa State University Studio for New Media.

One challenge of teaching new media is a widespread, pervasive belief in the myth of "digital natives" vs. "digital immigrants." This stereotype, articulated by writers such as Marc Prensky in 2002, argues that young people who have been raised immersed in digital media ("natives") are naturally more comfortable and more capable with new media technologies than older users ("immigrants") to the digital terrain (4). In my experience, this myth hampers both teaching and learning. Students use it to enable mediocre work— students often have a haphazard understanding of new media and sometimes assume their work is good before it is. Faculty and senior colleagues, on the other hand, often use the myth to justify their own limited digital skills and to justify not teaching digital technologies to students (who presumably already know them).

Content Incubators

Imagine if writing were taught that way. Could students be assumed good writers simply because they've grown up immersed in language from television, movies, books, and the Web? Writers need to learn skills and techniques, and to practice using them. Multimedia labs are a place where we can begin to teach digital media to managers and instructors, as well as colleagues and students in this way, as skills and techniques, enabling people to practice comfortably if and when they wish.

ISU has long-established degree programs in the field of technical communication, including BS, MA, and PhD programs (*http://engl.iastate.edu/programs/rhetoric/*). We have built a writing program (ISUComm, *http://isucomm.iastate.edu/*) that teaches all students at a university of 28,000 what we call four "modes" of composition: Written, Oral, Visual, and Electronic (WOVE). We teach upper-division courses in Web development, multimedia documentation, and content management theory. But as we sought to help a broad range of our faculty, staff, and graduate students teach digital media in these four modes, we found numerous problems with how instructors understand what and how to teach.

So we created an in-house multimedia lab—the ISU Studio for New Media—to help solve these problems. Our studio is distinctive because it attempts to teach users about producing digital media, without "teaching" in traditional ways. As this article will discuss, we've found this model is reproducible, in both industry and the academy. Here's what you might want to know if you'd like to build one of your own.

The ISU Studio for New Media

The ISU Studio is a small research center, open to all students, faculty, and staff interested in moderate- to high-sophistication digital media development. We designed it to seem a bit like a clubhouse, a technology hub, and a classroom.

In their 2000 book *The Social Life of Information*, John Seely Brown and Paul Duguid profiled the Silicon Valley in the 1970s, which they described as a community where people interested in computer technologies socialized with one another outside of work. They argue that workplaces had new technologies but assigned employees to very structured tasks, which limited creativity and innovation. University courses, they said, tended to teach older, established technologies. It was social environments *outside of* work or class—coffee houses and technology-based social clubs—which, they argue, helped to foster the culture of innovation and collaboration that prevailed in the Silicon Valley in the 1970s.

The ISU Studio, then, was created as a venture to accomplish something similar, on a smaller scale: a comfortable place for small-group collaboration, with high-end computer technologies, not integrated into class assignments, where students, faculty, and staff could collaborate with one another, discover skills they didn't yet know existed, and learn from each others' discoveries.
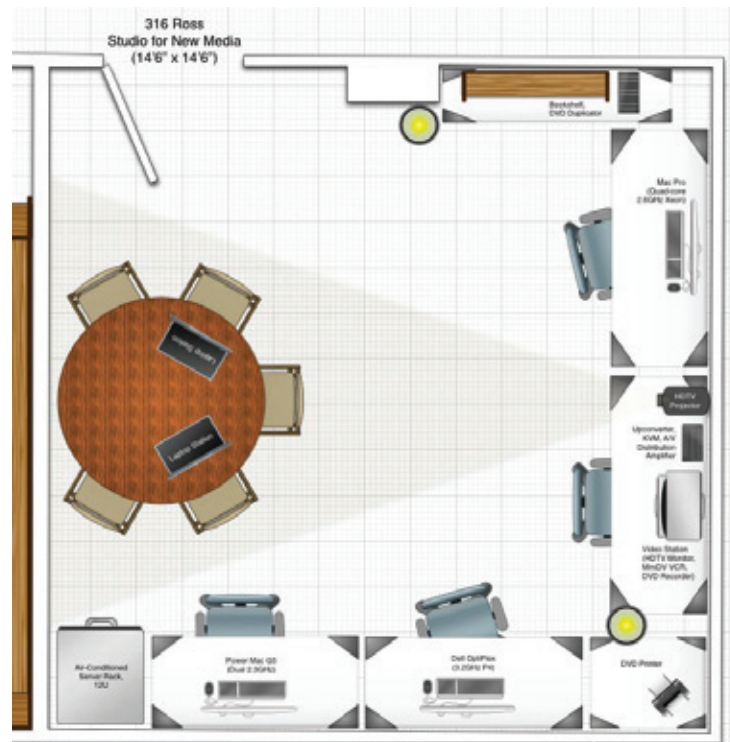
Floor plan for the Iowa State University Studio for New Media

Why You Need a Studio

Gone are the days when a single "webmaster" was responsible for all information posted to websites. This led to slowdowns that became frustrating for everyone. In the 2000s, content management systems began to enable more people to use templates, simplified "wiki" formatting, and easy browser-based editing. Users learned some of the larger aspects of writing for the Web *by* writing for the Web—while still not having to learn XHTML/HTML5 coding, Web development in PHP, Python or Ruby, or SQL database design (coding work was done only by a select few CMS developers, often behind the scenes).

But Domenic Venuto of Razorfish wrote in 2009 that content management systems (CMSes) face unacceptably

high failure rates (3). Ann Rockley has reported the same (408). Although they draw different conclusions about the reasons, the problem seems most often to result from miscommunication between the people who develop a CMS and its end users.

We run a half-dozen content management systems in our department. Our solution is to "grow our own" developers within our own department. A popular solution in business in the early 2000s has been "growing your own" project leaders and managers. Organizations bring in people with moderate experience, then spend time teaching them, in-house, the skills needed to manage teams and departments. The ISU Studio attempts to emulate this method with new media production. Rather than outsourcing multimedia production to a few experts who have already mastered new media software, or keeping only one or two faculty with specialization in multimedia separate from the other instructors, we designed the ISU Studio to make it easy for every person in the department to add such skills to his or her repertoire.

Space

In the ISU Studio for New Media, we set up a room large enough for an eight-person meeting. We placed in it two high-end 12-core computers and a desk with connectors for users' laptops. Then we installed prosumer equipment, largely funded through research grants. I'll go through a few aspects to consider when creating your own studio, describing why we made some of the choices we did.

The room is organized for usability, user experience, and interaction design testing. Each of the two more powerful workstations can record motion screen captures at 1080p30, along with video of users' faces, to DVD or Blu-Ray discs. The high-resolution projector can also be used for focus group or card-sorting exercises with teams of up to eight people. And the whiteboard recorder permits recording sketches in digital video formats with matching audio—perfect for recording brainstorming sessions or sharing them with online collaborators based elsewhere.

Fluorescent lights, widely used in older university and corporate offices for their energy efficiency, can distort the color in multimedia productions so that they look significantly discolored when viewed in home or natural lighting. So we've added new, inexpensive CFC floor lamps. They change the color of the room's lighting significantly and make the Studio a more comfortable space to work.

Equipment

The room has a 1080p60 LCD projector, which projects to a wall painted to optimize color fidelity—that's three times higher than the standard resolution of our campus projectors (which use 1024x768). We wired the room so that a switch allows any computer to use the projector (as well as the DVD duplicator, scanner, stereo, and SATA drive dock). This allows small groups to meet in the Studio and for any

computer to "share" its screen. Multimedia production is often a small-group activity, and optimizing the Studio for collaborative projects has made multimedia projects more everyday to produce.

High-definition video capture or processing is seldom done without a RAID array (a collection of hard disks faster than a single drive). The Studio computers each have high-speed arrays for media capture from DVD, VHS, or any of twelve SD and HD camcorders available for checkout to anyone in the department. Projects, once captured, can then be moved to a larger local volume or a room media server (which is slower but useful for accessing work later from home or office computers).

The high-end workstations can be accessed from anywhere using the open-source protocol VNC (a free screen-sharing protocol which works on Linux, Mac OS, and Windows). With this, remote users can "poll" to ask if anyone is using either computer, and if not, take over one of the workstations from home. This is useful for queuing late-night corpus linguistics or video processing tasks.

Video compression is a CPU-intensive process. It takes fast computers and some time to process video-compression algorithms like H.264 (the video format used in Blu-Ray). We've set a computer in the Studio as our "grid master." The other computers and a 16-computer lab upstairs have all been set as grid "agents." This means that when we need to compress video, we can assign the task to the grid, and the job will be distributed among all computers idle at that particular moment. This can speed up processing by 5 to 15 times, enabling things like rendering video for streaming in a few minutes.

The Studio also has a range of outdated technologies connected to the workstations to facilitate transfer of older media to new digital formats. We are able to transfer legacy content from VHS, audiocassettes, Zip disks, and floppy disks into a form usable on computers today.

Security

We installed a six-digit digital lock on the door in a building that's open 24/7. This enables people who work in the room to work mornings, days, evenings, or late nights, depending on their schedules—late evenings are surprisingly popular. We change the door code every few months, with the new code always accessible to logged-in members on the Studio website. Access to the room is limited to members only, but membership is open to anyone in the ISU community willing to undergo the orientation.

To minimize frustration sometimes involved with working in labs, the room's computers are (mostly) unlocked. Unlike classroom labs where computers are locked to prevent users from installing new software and files are automatically deleted on logout, the computers in the Studio are unlocked so users may store project files for weeks at a time, install software, or adjust settings as needed.

We have master disk images of the computers, and if someone modifies a system in a way that interferes with reliable usage, we reserve the right to reinstall the standard configuration. But we haven't needed to do this to fix an error since 2006. This openness instills in users a sense of responsibility to each other, and it teaches them about basic security concerns. It works surprisingly well.

How We Use It

Because the Studio culture has been built to be relatively informal, we've developed casual brown-bag workshops in which Studio members can display projects to other members and answer questions about the skills mastered in the process. Recent presentations include a multi-track DVD recording of a musical composed by a computer science graduate student, a presentation about plans to expand a campus learning management system that serves 550 courses per year, and a presentation about social networking tools being developed for the EServer Technical Communication Library (*http://tc.eserver.org/*). This is a good community-building exercise and has led to two ISU student clubs formed by students affiliated with the Studio—the Educational Video Interest Group and the Content Management Systems Club.

What Makes the Studio Affordable

"This sounds expensive," you're probably thinking. It's certainly been time-consuming in labor to build, expand, and lead a group of 65 members. But I helped a consulting client recently develop a business case for a similar multimedia studio at their corporation, and as we worked through the arguments in its favor, I came to realize how affordable such a Studio could be when considered from a cost-benefit analysis.

When I began multimedia development, I found rarely used equipment scattered throughout individuals' offices. A DVD-duplicating tower, for example, can be placed in a public Studio and will be used much more often than two or three bought separately by different projects, placed in individual faculty offices. Purchasing copies of Adobe CS Master Collection for all faculty didn't make as much sense as putting two copies on the high-end workstations in the Studio (which actually have Blu-Ray recorders) and purchasing just CS Design Standard for faculty, then allowing anyone to work in the Studio whenever they wish. Having two high-quality scanners available to everyone, rather than twelve cheap ones in individuals' offices, saves

funds as well. These savings became noticeable sooner than we had expected.

We encourage faculty who write grant proposals that include multimedia tools to locate the equipment in the Studio. The National Science Foundation's Guideline 6.B., which requires plans for the dissemination of findings to larger audiences, have led some faculty to plan Web strategies which have funded both software and hardware. The National Institute of Health has highly emphasized the dissemination of research in recent years, and the National Endowment for the Humanities' Office of Digital Humanities is now among its most active offices. Studio members have worked with these agencies. All of these combined with grant funding from internal university sources have enabled the Studio to flourish, without needing any "regular" budget.

In 2009, I flew to Seattle to meet with representatives of the Motivara Foundation who were interested in assisting a few universities with implementing high-definition videoconferencing facilities to aid HCI collaboration across distances. The equipment from that grant has been very useful to our usability studies and collaborations with colleagues in several digital humanities initiatives.

To my knowledge, four studios elsewhere have been built based upon our model, consulting with us and using floor plans and wiring diagrams we post to the public in the spirit of open-source development (see *http://newmedia.engl.iastate.edu/gallery/*).

As you might imagine, I could write many stories about how our Studio has served as an incubator to foster multimedia production. But my point isn't braggadocio— it's to persuade readers that it's *actually possible* today to enable multimodal production without requiring too-expensive equipment or experts. Our venture isn't exceptional as much as it is an example that, with a bit of encouragement and usable space, multimodal production can flourish among technical communicators. ℹ️

GEOFFREY SAUER *earned his doctorate at Carnegie Mellon University. He joined STC in 2001 and has been on the faculty at Iowa State University since 2003, where he teaches new media development, technical communication, and film. He is the director of EServer.org, a nonprofit publishing venture which hosts sites such as the EServer Technical Communication Library. He is also the director of the ISU Studio for New Media, director of ISUComm Technology, and (in his spare time) runs a consulting firm, Sauer New Media Consulting.*

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