TEAMING UP TO PROMOTE EFFECTIVE TEACHING, LEARNING, AND RESEARCH USING TECHNOLOGY

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ABSTRACT

Teaming Up to Promote Effective Teaching and Learning Using Technology

At the University of Delaware, four units came together to plan a joint summer institute to assist faculty with learning to use information technology. The four units collaborating on this special program, held June 1995, were User Services/Information Technologies, the Library, the Center for Teaching Effectiveness, and the Instructional Technology Center. Each unit has a significant history of offering faculty seminars and workshops which promote new aspects of teaching and learning. These four units worked together to plan and execute the program, which highlighted faculty presenters as well as how-to hands-on workshops taught by computing and library professional staff with guidance from the Center for Teaching Effectiveness. Not only has the University's computing network increased opportunities for faculty and researchers to work together—its presence has created new alliances among University groups who support faculty development in using information technology and resources.
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INTRODUCTION

The tall trees and green lawns of the University of Delaware campus provide a garden-like environment for its 20,000 students and 1,000 faculty. As the winter of 1994 ended, the University had just received the CAUSE award for Excellence in Campus Networking. On the campus mall, the roots of the new electronic network beneath the campus were alive and moving data at speeds of 100 million characters per second, the learning environment was ripe for another kind of flowering, and buds prepared to blossom. The Library, 28 microcomputing sites, every classroom, and every Residence Hall room was wired for Internet access. State-of-the-art, technologically advanced lecture halls and classrooms were in place. The early harbingers of this new season were the innovative faculty at the forefront of designing new electronic instructional programs.

How does the University assist all faculty in applying the tools of technology to their garden—that is their classroom—where the real flowering may have the ability to transform education?

The University provided faculty with an innovative, week-long technology institute developed by a team from four University divisions. The process by which this week-long institute evolved and the design of instruction provides a successful model of creative collaboration for faculty and instructional development programs.

Four University divisions, which had not previously collaborated on large instructional projects, worked together successfully to provide a new type of program.

The beauty of what occurred was in its simplicity. That very simplicity makes this project one that can be duplicated by other Universities.

Surveys of colleges and universities across the U.S. report that most faculty are
comfortable using computers for word processing, and some use electronic mail to communicate with their students.¹ But, the application of technology to teaching has been slow. For many faculty, technology in the classroom means that word-processed overheads have replaced handwritten overheads. What explains this phenomenon?

William Geoghegan from IBM uses the theories of Moore and Rogers to describe how to understand the different reactions that faculty might have to innovations such as new technologies. He identified adoption behavior along a continuum. Beginning with the innovators and early adopters, he described traditional faculty as the majority/or mainstream faculty, and the nonadopters as the 15% who will never adopt these technologies into their classrooms. He emphasized that the majority need assistance in crossing the chasm to technology adoption.²

At the University of Delaware a team representing four University divisions developed a highly successful faculty institute. This week-long faculty institute was designed and implemented within eight weeks. How did four divisions of the University come together as a team to work collaboratively on major faculty development project?

CATALYST FOR CHANGE

The wiring of the campus focused the attention of faculty and administrators who were already actively using electronic resources and technology. The challenge was to develop the interest and skills of all faculty and to encourage greater use of technology in teaching and research.

The Provost initiated a meeting chaired by the Vice Provost for Academic Affairs. The meeting included selected faculty and administrators who were directly involved with either faculty development or technology programming. The two purposes were to address the need for more technology-related educational programs for faculty and to encourage technology use in teaching.

The divisions represented included Information Technologies, the Library, the Instructional Technology Center, and the Center for Teaching Effectiveness. The committee also included faculty who represented both novice and advanced users of technology. Two meetings of this group were held to discuss how best to provide to faculty assistance in using technology in the classroom.

The first outcome of that meeting was a survey of faculty needs designed and conducted by the Center for Teaching Effectiveness. Generally, the survey results served to dispel several myths about what faculty knew, wanted to learn, and pinpointed areas where the four divisions

¹ “Information Technology Moves Slowly into the Classroom,” The Technology, Teaching and Scholarship Project, University of Southern California, October, 1994.

concentrated their efforts.

The second outcome of that meeting was that the administrators from the Library, Information Technologies, Instructional Technology, and the Center for Teaching Effectiveness then joined together in the decision to develop and implement a technology instructional program for faculty. Directors of each of the divisions then asked the appropriate individual in their area to meet and plan the project.

THE SURVEY

With input from the initial committee and the Center for Teaching Effectiveness (CTE) Faculty Advisory Boards, the CTE developed a survey, which was mailed to approximately 950 faculty; one third (315) returned their responses.

The survey responses told us much about faculty learning needs. A summary of those items which may be of general interest to this group includes:

- The majority of faculty respondents use their computers in both office and at home
- The majority of respondents described themselves as intermediate or advanced users
- The 1/6 who described themselves as novice or non-users may have given us the most valuable information

Over half this group wanted to learn the following:
- how others are using technology in their teaching
- how to use a networked environment

Nearly 2/3 wanted to learn the following:
- to use the Internet to retrieve information
- to prepare text and graphics to send on the Internet
- to use video, CD, and audio
- to learn about electronic library resources

Approximately 2/3 wanted to learn the following:
- use e-mail creatively in instruction
- to communicate with and distribute materials to students
- to use computing applications to conduct research
- to design and conduct courses using TV and video

Although a few wanted basic instruction in software such as word processing and operating systems, one third wanted to learn presentation software and how to use the Ethernet and cable TV connections and capabilities in our classrooms.

Their preferred learning styles vary, and approximately half our respondents said that for their own learning, they prefer hands-on, step-by-step instruction in small groups with practice time and individual assistance. After taking a training class, they most often want individual consultation on a single item and 1/5 need consultation on how to apply what they learned to their own particular
instructional projects. One-fourth wanted tip sheets and written reference materials.

When asked what they MOST need NOW in order to use technology in their teaching, responses were scattered, but 40% said they want intermediate and advanced applications to learn new features. Fully 1/3 need help using the skills they already have to design classroom applications, and how to get funding for software, equipment and development time. This is not surprising given the majority of respondents are intermediate or advanced users of technology. The novices asked for the basics on how to begin to use their computers, the ITV classrooms, video and/or satellite facilities, and basic instructional design skills.

Typical comments received were like the following:

"I need to see what others are doing, so I know what is possible and then have time to think about what, if anything, I might want to do."

"What's available and how do I use it?"

"What are my choices?"

"Where to go and who to contact to find out what is available and how to gain access to equipment, software, and classrooms."

Other comments and questions were very specific to particular individuals who asked how to get specific kinds of cable, software, equipment, funding, and so on. When asked whether the person completing the form would be willing to teach other faculty how to use technology, 38 faculty said, "yes", and gave us lists of things they would be willing to teach, ranging from how to use software such as WordPerfect and Windows all the way to multimedia applications.
TEAM PARTNERS IN TECHNOLOGY EDUCATION

Each of the four University divisions involved—Information Technologies, the Library, the Instructional Technology Center, and the Center for Teaching Effectiveness—has significant experience in providing instruction and training. Each division also has a commitment to enhancing education, but with a different focus.

Information Technologies has long been offering classes in computing applications such as word processing, spreadsheets, and statistical programs, and it has been moving aggressively into teaching University faculty, staff, and students to use Internet resources and presentation software.

The Library has always provided instruction for finding information in all forms. This instruction includes classroom teaching, computer assisted instruction, and the electronic library sessions open to the entire University community. Workshops include those to help users find scholarly information on the Internet and the Web for research.

The two other team partners have a slightly different history. The Center for Teaching Effectiveness provides faculty development through instructional consultation. Services include help with how to design, conduct, and evaluate instruction as well as teaching faculty to use effective teaching strategies such as problem-based learning.

The Instructional Technology Center is a self-supporting unit in the College of Education, which relies on grant funding, and assists faculty in developing multimedia courseware, including offering workshops on creating multimedia.

PLANNING PROCESS

The formal planning process for the development of a unified program of instruction for faculty on using technology at the University was surprisingly brief. Much of the actual planning was carried on in the individual divisions. How was this possible? Early on, the division representatives developed a consensus on how to proceed and on what could reasonably be accomplished. The initial meeting of administrators and faculty provided the catalyst, but the implementation was completely the responsibility of the four team members.

Attendance at a symposium on teaching and technology at the University of Maryland gave the team additional ideas for planning. The two hour ride each way provided time for the team to brainstorm and share ideas, and make decisions about what would be best for the Delaware faculty. Each team member then had one or two meetings with appropriate staff in their division responsible for training. Communication among the team members was largely by e-mail. Only one formal planning meeting was held by the team after the trip to Maryland.

TEAM DECISIONS IN INSTRUCTIONAL FRAMEWORK

In one afternoon, the team members had designed the framework for dissemination of information
to faculty and decided on an overall instructional design. An important decision that allowed the date to be set only eight weeks later, rather than many months later, was that the majority of workshops were to be those previously developed and successfully held. The consensus was that the majority of faculty had not attended all, or even most, of the workshops already available to them. The concentration of classes into a single week would enable faculty to immerse themselves in learning and, perhaps, make the leap across the “chasms.” Even faculty who did not participate in the week long institute, would become more aware of available instruction and might take advantage of repeat presentations later in the semester. Each of the four units selected their own workshops to be offered after consultation with trainers and librarians in each area.

**Specific decisions made involved:**

**Participants:** The participants would be limited to University of Delaware faculty and graduate teaching assistants. This would encourage participation and allow sufficient resources and staff support for all interested faculty.

**Time:** The time was set as a one-week period from June 5-9, 1995, the first week of the summer session. This time was selected because statistics of previous years and the survey indicated that early summer and winter sessions are when faculty say they are most likely to attend workshops.

**Content:** The second decision was to offer several workshops which had been previously developed and presented in the past year. Workshops were between one to three hours long. Demonstrations of newly wired electronic classrooms would be included in an “open house” mode. These classroom open houses would include descriptions and presentations on how to use the various computing and multimedia equipment available in these large classrooms.

**Location:** The third decision was that most workshops were to be held in electronic classrooms. The Library, Information Technologies, and the Instructional Technology Center, each has its own instructional classrooms equipped with enough networked workstations to allow each faculty member hands on experience.

**Faculty involvement:** Faculty from the original Provost sponsored committee reviewed the team’s plan and gave it strong endorsement. The fourth decision made was that although it was very desirable to offer a segment during the week that included faculty presenters, the time was limited to secure commitments of many faculty for this first Institute. Some well-known faculty presenters on-campus agreed to make brief presentations on how they used some of the same computing applications. Information Technologies then offered hands-on workshops the same week on compatible topics.

**Advertising:** The Center for Teaching Effectiveness took responsibility for compiling and organizing the schedule and producing a brochure, which included a detailed schedule of workshops, description of classes, registration form and procedures. Graphically, the brochure was a simple 11” X 17” yellow sheet folded in half, with 10 point type listing all workshops chronologically, followed by a brief description of the content of each.

**Registration:** Registration was decentralized to each of the four units. Each unit had already established registration procedures and staff and was responsible for handling phone, e-mail and
paper registration of faculty signing up for workshops. Registration procedures instructed faculty to contact the presenting division to register, and those staff could then answer questions related to alternative times and the content of the workshop. This process utilized existing systems, staff, and procedures.

**Fees:** All workshops were at no cost to faculty. Each division assumed the cost of production of materials for its workshops. The Instructional Technology Center, the only one of the four divisions which charges for its multi-media instruction workshops, simply offered their empty seats during that time period to faculty at no charge.

**WORKSHOPS AND TECHNOLOGY SESSIONS SCHEDULED**

Most workshops selected had already been developed, presented, and favorably evaluated. Some new workshops were developed in response to the needs expressed in the faculty survey. The week long Institute was divided into 33 time slots, based on the length of time required by the presenter, most from one to three hours in length. Information Technologies, with assistance from the Center for Teaching Effectiveness, arranged for three general sessions. These were designed to provide an overview and to include faculty presenters. These included:

- “Enhancing the Traditional Classroom with Electronic Communication” in which three faculty members described how they had used e-mail, newsgroups, and the World Wide Web with their students.
- “Choosing the Right Tool for Your Class” was a panel of the same faculty discussing the relative advantages and disadvantages of the various tools for particular tasks.
- “Using the Classroom of the Future NOW” in which faculty and Information Technologies staff presented brief modules on different classroom applications of technology.

Workshops offered during the remainder of the week focused on those features which faculty could apply to teaching and included:

**Information Technologies workshops:**
- “Getting Started with Pine Mail”
- “Getting Started with PowerPoint”
- “Using Newsgroups to Extend Classroom Discussion”
- “Using E-mail to Extend Classroom Discussion”
- “Building a Home Page for your Classroom on the World Wide Web”
- “Teaching with Video and Instructional Television”
- “Using PowerPoint for Video and Television Instruction”

**Library workshops:**
- “Electronic Access to Journal Information”
- “The Web as a Library Resource”
- “Current Contents on DELPLUS”
- “Electronic Document Delivery using OCLC FirstSearch and CARL UnCover”
- “Scholarly Resources on the Internet”
- “Government Resources on the Internet”
Instructional Technology Center workshops:
“Creating Multimedia Objects”
“Using PODIUM”
“Multimedia Toolbook”
“Managing Multimedia: Development Support”
“Managing Multimedia Delivery”

EVALUATION AND FEEDBACK

Workshop Evaluation and Feedback

Evaluation of the first Institute indicates that faculty expressed overwhelming satisfaction with what they learned (98%). Faculty who attended are excited about what they have been doing this fall semester to use e-mail or newsgroups to extend class discussions, or having students retrieve syllabi and assignments via the World Wide Web, for example.

The Next Step

The next University of Delaware Faculty Institute will be held in January, 1996, and will be called the “Teaching, Learning and Technology, Winter Institute for Faculty and TAs.” Some sessions offered last June which were duplicated have been deleted. A call for proposals for the faculty demonstrations was added, there will be two faculty from the University of Maryland providing keynote sessions, and the popular hands-on workshops will be repeated.

For future planning, there are a number of issues to be kept in mind. One of them is the human factor. Although most faculty are accustomed to being seen as experts, when they are novice learners, they experience the same anxiety that any new learner experiences. For example, one of our faculty members commented that before the workshops, the idea of using technology seemed overwhelming. After the workshops, the main change he reported was: “...the information was available on how to do what I needed and I had an idea of the possibilities. The other significant part was the support I received all along the way from Information Technologies. The support was the most important part.” Those who remain sensitive to these factors, while at the same time helping faculty come to grips with being a student again (learning to say “I don't know”), and helping faculty save face in the process, may be more successful in helping faculty to adopt new technologies.

Through the survey, 38 faculty indicated they would be willing to teach other faculty how to use technology, our goal is to create teams of faculty and technical consultants who will co-lead these training sessions. As our faculty become more knowledgeable with these new teaching tools, it is expected there will be more expertise available to offer additional workshops which are focused primarily on the teaching and learning applications instead of learning how to use software.

A variety of options will need to be available to accommodate the various ways faculty learn new
skills. Workshops alone will not provide for the full range of learning needs. Already sets of self-paced multimedia development materials (text, CD-ROM, and videotapes) and other self-paced instructional video tapes are available in several locations around campus for faculty to borrow. A Multimedia Users Group (MUG) meets monthly to share their expertise with each other. A number of novices have joined the group to learn more. The feasibility of setting up additional development labs with accompanying teams of instructional and technical consultants to assist faculty in developing educational materials is being explored. The units which planned the Institute will soon meet with other units, such as the Registrar, to determine how best to provide comprehensive “classroom services” for faculty questions related to classrooms and teaching. Because our administration is committed to keep teaching and learning at the center of our technology usage, some believe that the CTE is the appropriate first point of contact. And, since evaluation has always been and continues to be a key to any model employed, continued evaluation and feedback will be used to gather faculty and student data on the services which are initiated.

As useful and important as the pedagogical functions of technology may be, it becomes apparent very quickly that its potential impact might have other dimensions as well. For example, without this project, these four units would not be working together in quite the same way. Nor would we continue to trouble ourselves with this seemingly odd combination of units working together on behalf of the faculty, for the traditional ways of operating are rewarding enough. The challenge becomes even more complex when trying to transform a whole campus rather than just one individual faculty member. It means that each member must be able to see where each contributes, engage in meaningful dialogue, and all of us must continually ask of faculty and of ourselves: “What do you want your students to learn?” “Why?” “What do we know about the students’ learning needs?” and so on.

Now, this team is dealing with something that is mostly unknown and constantly changing. The interaction involves the sharing of authority, expertise, and (yes) turf. Future success will depend in large part to the continued recognition that we are dealing not simply with providing technology services to the faculty, but that this effort is always in support of the teaching/learning process. Further, there is a need to understand more fully the dynamics of organizational change as well as the principles of faculty development.

Faculty development research literature suggests three forces that are most likely to drive faculty to change their practices:

- Intrinsic motivation is probably the most powerful. Participation is usually voluntary and we observe in our practice “good teachers who want to get better.” Adding the technology tools to the teaching “tool kit” may serve learning better for many students.
- Teaching consultation services are a standard part of faculty development programs in many institutions. Providing additional consultation, which specifically addresses the ways technology can enhance instruction, may lead to better teaching and learning.
- A positive institutional climate for teaching may be the single most influential factor in efforts to improve teaching across an entire campus. A positive climate for use of technology in teaching can also be fostered by providing institutional supports.

Promising practices which offer to bring traditional faculty into this new era are those which appeal to the intrinsic values and beliefs held by faculty, which listen to faculty and help them answer the questions they have about their classroom practices, and which put support systems in place and
make sure that faculty have learning partners for their development paths. Most faculty see teaching as their central role, they work hard at their teaching, take pride in it, and believe that the relationship between the student and teacher is central to learning. The reasons for studying most disciplines, such as chemistry, biology, history, literature or a second language have very little to do with technology. If, however, technology can contribute positively to the enhancement of what faculty and students do as they engage with each other in the learning process, and the concerns of faculty can be addressed in some effective way with the use of educational technology, then the mainstream faculty may adopt these new tools.

Finally, the experience at University of Delaware has shown that educational technologies, when supported by a far-sighted administration, has the potential to empower faculty to achieve classroom successes that none of us can anticipate. However, the faculty should continue to determine the curriculum, and the evolution of technology on our campuses should be dictated by the learning needs of students and faculty efforts to meet those needs. Therefore, the impetus should come from the teachers and students themselves, and they (not the technicians) should ask very tough instructional questions of the technology. Together with the technicians and their students, faculty will create the most imaginative uses for educational technology. Furthermore, comprehensive evaluations, particularly the inclusion of student evaluations of educational applications should help assess the pedagogical value of any innovations.