ONLINE TEACHING IN AN ONLINE WORLD

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EXECUTIVE SUMMARY

Welcome to the first of a series of research reports and survey results related to the use of the Internet in teaching and learning. This initial report addresses the use of the Internet by postsecondary instructors. We conducted this survey in response to the proliferation of college instructors using the Web as a resource in their teaching. Instead of randomly surveying college instructors about their Web-based teaching needs, experiences, and support mechanisms, this study targeted those with some experience in using the Web as a teaching and learning resource. More specifically, this sample was selected from instructors who had at least shared an online version of a syllabus, posted an instructor profile, or reviewed and critiqued online resources on the Web.

The objective of this research was to learn about the common obstacles, supports, and experiences as well as the tools used among early adopters of the Web as a teaching resource. The findings indicate that many college instructors already have extensive online teaching experience. In fact, the participants in our sample have some strong opinions and suggestions for college administrators and courseware developers.

Whereas most studies simply ask about online experience, time investments, and common complaints, this study attempts to understand some of the pedagogical tools and mechanisms that could benefit college faculty today as well as 5-10 years from now. For instance, what is missing from current Web-based learning courseware from an experienced user's point of view? How can we move from courseware that simply warehouses or registers students to tools that engage them in interactive and collaborative events and experiences? And how can college faculty share their online learning successes and failures with other instructors and experts in their fields?

Still more questions confront instructors. For instance, what training and reward structures need to be in place to foster successful online teaching and learning experiences? Who is making the decisions about which Web-based teaching tools to acquire? What type of support mechanisms should decision makers provide for online instructors? And do such decisions and supports mechanisms vary between public and private, or large and more modest-sized, institutions?

The results of this survey begin to answer many of the above questions. For instance, early adopters of the Web for teaching seem willing to share course resources, consult the Web for expert teaching answers, and offer their instructional services to others. While these post-secondary instructors employ a wide range of tools and tasks in their online teaching, they point to a myriad of pedagogical tools that are not yet available. As a result, they are suspicious of the motives of administrators promoting Web-based education without the appropriate technical or pedagogical support.

Even though most of these college instructors voluntarily share course information and resources online, they caution that Web-based teaching efforts will require additional time and compensation for online instruction to become a more widely accepted practice. Institutional positions regarding ownership of course material is one issue that remains unresolved according to our study participants. The development and sharing of course material and ideas online will certainly be limited until universities clarify their policies (Goldberg, 2000).

Respondent Background

Description of Survey Respondents
- Sixty-four percent of our sample were drawn from instructors using the MERLOT Web site (see http://www.MERLOT.org). Another 36 percent were from the World Lecture Hall (WLH) Web site (see http://www.utexas.edu/world/lecture).

Type and Size of Respondent Institution
- Over two-thirds of our respondents were from public institutions (19 percent from 2-year and 51 percent from 4-year institutions). Only 21 percent were from private institutions (1 percent from 2-year private and 20 percent from 4-year private institutions). Nine percent were from other types of instructional situations or were not specific about the type of public or private institution they were in.
- Most of our sample worked at large institutions (54 percent) followed by medium-sized (26 percent) and small (20 percent) institutions.

Years of College Teaching Experience
- The teaching experience of our respondents was mixed with 36 percent having more than 20 years of experience, 34 percent with 10-20 years of teaching experience, and only 10 percent with fewer than 4 years of experience.

Respondent's Age, Gender, Rank, and Educational Background
- Most respondents were established instructors with extensive educational backgrounds. Nearly half of the instructors in this study were over 50 years old. Another 44 percent were between 36 and 50 years old.
- Sixty percent were males.
- Most were ranked at the professor or associate professor level (60 percent), while another 17 percent were assistant professors, 8 percent were adjuncts, and 5 percent were lecturers. The remaining 10 percent were in other categories such as learning center directors, instructional designers, or administrators, most of whom had some teaching responsibilities.
- Nearly 70 percent had a doctoral degree and 6 percent were ABD. The highest degree level for the remaining participants was a master's degree (22 percent) or a BA (2 percent).

Level of Courses Taught

- Surprisingly, nearly all of the respondents had undergraduate teaching experience (95 percent), while 62 percent had taught at the graduate level and 40 percent had experience teaching non-credit and other types of workshops, programs, or courses.

Participation in Online Course Sharing

When and How Did They Discover Sharing Resources?

- More than half of the respondents first posted to MERLOT or the World Lecture Hall within the past year, indicating that sharing resources online is a recent trend among college instructors.
- Most discovered these course-sharing resources through Internet links (39 percent), colleagues (27 percent), or institutional announcements (25 percent).

Why Did They Share?

- Nearly half (45 percent) of the respondents shared Web resources as a means of professional growth. Many posted to the Web to share pedagogical theories or strategies with their colleagues (38 percent). More than half believed in the importance of course sharing.

Type and Number of Resulting Contacts

- Many respondents had been contacted as a result of sharing resources online. Of these, most contacts were from students (30 percent) and instructors (32 percent). Some, however, had been contacted by publishers (14 percent) and other companies or institutions (12 percent).
- Many of these instructors had more than 10 student contacts as a result of posting Web resources or information online.
- More than 90 percent of the respondents indicated that they welcomed comments from colleagues on their online syllabi and other resources.

Attitudes about Online Learning

Course Material Ownership

- Extremely few respondents (i.e., 16 percent) felt that online courses were the property of their institution.
- Sixty-three percent of respondents indicated that their institution did not have clear ownership policies, and another 21 percent responded that they were unsure about ownership policies at their institution.
- Despite this lack of clarity, only 3 percent of these college instructors do not plan to abide by the ownership guidelines of their institution.

Quality and Accreditation
- There were mixed reactions regarding whether learning is improved in online environments with 32 percent agreeing that it is, 29 percent disagreeing, and 40 percent unsure.
- More instructors were supportive of bachelor and master's degrees earned entirely online (44 and 45 percent, respectively) than doctoral degrees (19 percent). In fact, sixty-two percent were opposed to doctoral degrees earned entirely online.
- Eighty percent believed that accreditation for online distance education was necessary for high course quality.

Instructor Compensation for Online Teaching?
- The preferred mode of compensation for online teaching for these college instructors was additional salary (34 percent). Some instructors preferred nondiscretionary stipends (14 percent), course royalties (15 percent), release time (10 percent), or recognition (4 percent).
- Twenty percent believed that there should be no additional compensation for teaching online compared to traditional classroom teaching.

Current Online Teaching Situation

Online Teaching Experience
- When asked about their experience with different forms of online instruction, nearly 40 percent of the respondents had taught courses partially online; 18 percent had taught courses fully online (i.e., without any face-to-face contact between students and instructors); and 19 percent of the respondents had done both partial and completely online courses. Only 24 percent had no online teaching experience.
- In terms of overall experience, survey respondents with online teaching experience had taught an average of 4 to 7 courses either partially or fully online; those with both partial and fully online experience had, on average, close to 7 such teaching experiences.

Instructor's Web-Related Skills
- Respondents had a high degree of comfort sending and receiving file attachments via e-mail (93 percent) and creating HTML pages (62 percent).
- Fewer than half of the respondents were highly comfortable using a Web-based courseware system (48 system), moderating a Web-based asynchronous discussion forum (44 percent), or hosting an online chat session (33 percent).

Time Commitment and Attrition
- Over 80 percent of the respondents indicated that teaching online was more time-consuming than teaching traditional courses.

- According to the respondents, the dropout rate was higher in fully online courses than in partially online courses—ten percent of fully online courses experienced more than 50 percent attrition, whereas only 2 percent of those teaching in a blended mode (i.e., courses combining Web and classroom-based instruction) experienced that degree of attrition.

Internet Access

- Seventy-eight percent of the respondents had Internet or Web access in their current or most recent classroom.
- According to the respondents, nearly all students and instructors had access to an Internet-connected lab for class use (93 percent).
- Nearly all respondents had access to the Internet from home (97 percent).

Platform Choices and Preferences?

- Eighty-three percent of the respondents to this survey indicated that their institution provided a Web-based platform or courseware system for developing online courses or enhancing on-campus courses with online features.
- Of those institutions providing access to a Web-based courseware platform or online conferencing tool, 27 percent offered access to more than one platform or conferencing tool; 10 percent to three courseware systems or conferencing tools; and 5 percent to four or more systems or tools.
- Respondents indicated that they preferred online courseware that was easy to use, functional, consistent, reliable, customizable, flexible, comprehensive, professional in appearance, integrated, secure, learner-centered, and pedagogically useful. Many specific tool and support features were mentioned.

Future Online Teaching Situation

Online Teaching Load

- Of those who expected to teach during the next decade, 27 percent of the respondents anticipated that more than a fourth of their teaching load would be allocated to online courses in the next year. Their predictions increased to 44 percent in two years, 64 percent in five years, and 73 percent in 10 years.

Freelance Instruction

- Only 16 percent of the respondents had been freelance or adjunct instructors on the Web in the past.
- Nearly 75 percent, however, were interested in teaching as freelance or adjunct online instructors in the next five years. Demand as well as services for such instructors may explode during the coming decade.

Institutional Motives and Decision Making

Primary Institutional Motives for Online Education
- Forty-one percent of the respondents agreed with the statement that a primary motive behind online education was profit, while 62 percent felt that a primary motive was learning. Nearly all (93 percent), however, also perceived that a primary motive was increasing access to education.
- In terms of their home institution, these percentages were slightly lower with 29 percent of the respondents agreeing that a primary motive was profit, 53 percent learning, and 81 percent access.

Reasons for University Investment
- According to these respondents, decisions by their home institutions to invest in Web-based teaching and learning included such important factors as access to external resources (67 percent), improved efficiency in teaching and research (63 percent), and providing distance education to a potentially unlimited audience (58 percent).
- Less important factors were cooperation and resource sharing within the higher education community (41 percent) and building partnerships with business and government (31 percent).

Web-Based Teaching Decision Making
- According to the faculty respondents, university administrators were key players in 63 percent of the decisions to use and support instructional technology for Web-based teaching. Faculty and departments had a role in such decision-making in 40 percent of the institutions surveyed. Campus technology support units or personnel make these decisions in 36 percent of the respondent institutions, while chief technology officers were responsible in 27 percent. Teaching and learning center directors were involved in these decisions roughly 20 percent of the time.
- Decision-making varied by size of institution. At institutions with enrollments of under 3,000 students, faculty, campus technology support, and chief technology officers are more likely to make these decisions than at larger institutions. In contrast, teaching and learning center directors and departments are more influential in larger institutions. None of these differences, however, were statistically significant.
- Differences in decision-making between public and private institutions were relatively minor as both typically relied on administrative level decision making. However, public institutions more often involved teaching and learning center directors, departments, and campus technical support people in their decision-making process, while private institutions more often involved faculty.

Usefulness of Web-Based Tools for Teaching and Learning

Useful Online Class Tools

- Web tools for posting syllabi online were utilized by 85 percent of respondents and 72 percent deemed them highly useful.
- Tools for online cases, problems, or questions were valued and used by 70 of the respondents.
- Over 70 percent of the respondents used file uploading and downloading tools and 65 percent rated them as highly valuable.
- Online lecture notes were utilized by 69 percent of the respondents and 57 percent of them deemed such tools useful.
- Online self-test tools were used by 47 percent of the respondents and 52 percent of these faculty rated this feature as highly useful.
- Online tests and quizzes as well as tools for placing an entire course on the Web were valued and used by about 47 percent of the respondents.
- Used less and also viewed as less useful were online student course evaluations and databases.
- In general, the percent of respondents who viewed online collaboration and sharing tools as useful was higher than the percent that actually used them. Therefore, development of such tools should become a priority.

Useful Collaboration and Sharing Tools

- College instructors perceived a need for more collaborative tools. Tools with more than a 10 percent gap between actual use and perceived high usability included tools for instructors to form collaborations with other instructors, tools for students to share stories with other students, tools for interactive feedback and annotations on student work, tools for instructor test-making collaboration, tools for instructor task collaboration, and tools for online technology demonstrations. Large gaps between reported teaching practice and perceived usability indicates a need for additional collaborative tools in e-learning environments.
- Some types of collaborative tools are more likely to be used than others, including discussion forums (61 percent), tools for providing feedback and annotations on student work (46 percent), and tools for student teamwork or collaboration (46 percent).
- While many respondents utilized instructor profile tools (52 percent) and student profile tools (34 percent), few indicated that they were highly useful in their teaching.
- Real-time chat tools were only utilized by 32 percent of the respondents in their teaching.
- The respondents, in general, perceived online guestbooks as unimportant.

Useful Online Instructional Activities

- All online activities (e.g., online simulations, data analyses, laboratories, performances, and critical and creative thinking) were ranked as highly

important by more than 40 percent of the respondents. In fact, fewer than 25 percent found these tools to be of low importance. However, actual use ranged from only 23 percent to 45 percent, thereby indicating another critical area for Web-based teaching tool development efforts. The most requested online instructional activities were those meant to foster student critical and creative thinking.

Useful Web Resources

- Search engines were used by 83 percent of the respondents for teaching purposes, and 70 percent viewed them as highly useful for teaching.
- Online article and journal links were used by 74 percent of the respondents in their teaching; 70 percent viewed them as highly useful for teaching.
- Sixty-one percent used discipline-specific online teaching and learning resources in their teaching, while 58 percent used more general online resources related to teaching and learning pedagogy. More than half of the respondents viewed each of these types of online resources—general and specific—as highly useful in their teaching.
- Web sites and resources from colleagues were used by 58 percent of the respondents. Fifty-four percent viewed these as highly useful.
- Online glossaries with examples on the Web were used by 57 percent of the respondents and a similar percentage found such tools highly useful.
- Tools for students to make Web link suggestions as well as tools for book recommendations were used by nearly half of the respondents in their teaching.
- Online newsgroups were used by only 18 percent of the respondents and few viewed them as potentially useful for their teaching.

Obstacles and Support Mechanisms

Obstacles to Web-Based Teaching

- According to 62 percent of the respondents, the main obstacle to using the Web in teaching was the preparation time required.
- Forty percent of the respondents identified the lack of support for technical problems and course development as major obstacles to teaching online at their institution.
- Other obstacles included time to learn to use the Web (37 percent), inability to display the Web in the classroom (29 percent), lack of training in how to use the Web (24 percent), inadequate hardware in one's office (18 percent), lack of software (15 percent), and other problems (17 percent).
- Lack of interest in the Web for teaching was not an obstacle for these respondents.
- Faculty from smaller institutions were significantly more likely to list technical and course development support as obstacles than those teaching

in settings with over 10,000 student enrollments (51 percent versus 31 percent).

- Faculty members from public institutions were significantly more likely to list time to learn to use the Web as a barrier in their Web-based teaching efforts (40 percent) than faculty from private institutions (20 percent).

- Though not statistically significant different, female faculty appeared to face more barriers than males, including time to learn to use the Web, time for online course preparation, and a lack of support for their technical problems and courseware development efforts. In contrast, males noted a lack of software or out-of-date tools as obstacles to their Web-based teaching practices significantly more often than females.

Support for Web-Based Teaching and Research

- The main supports requested by these college instructors to utilize the Web in teaching, research, or administrative duties included release time (70 percent), instructional development grants and stipends (68 percent), recognition in tenure, salary, and promotion decisions (68 percent), technical support staff to assist with technical problems (68 percent), time to learn about and use the Web (60 percent), instructional design support (58 percent), and training on how to use the Web in teaching (45 percent).

- Less popular support structures included greater access to computers for students (31 percent), online resources (31 percent), e-mail notification of technology changes (27 percent), and chat room Web help (13 percent). Such findings suggest that access to Web resources is no longer a significant barrier to effective online teaching and learning.

- Faculty members in public institutions expected many more forms of support for their Web-based teaching efforts than those in private institutions, including a desire for more online resources, instructional development grants or stipends, release time, instructional design help, Web training, time to utilize the Web in teaching, greater student access to computers, recognition for their online efforts in salary and promotion decisions, and e-mail notification of changes in Web-based teaching resources.

- Institutional size made a difference in terms of the supports instructors deemed necessary. Faculty members at smaller institutions pointed to the need for instructional design support. Those in medium-sized institutions wanted more time allocated to learn about and utilize the Web in their teaching. Finally, instructors at large institutions indicated that they needed recognition, development grants, and release time.

- Gender differences here were minimal, though male instructors did request release time and opportunities for instructional development grants significantly more often than did female instructors.

Online Communities, Services, and Resources Needed

Online Communities for Resource Sharing
- Eighty-two percent of respondents were interested in becoming part of a free community for the sharing of course resources and teaching ideas.
- The most popular features of such a community included the availability of pedagogical ideas (77 percent), answers to teaching problems (64 percent), expert advice (62 percent), classroom management tips (56 percent), and professional recognition (42 percent).
- Lower rated items included online newsletters (25 percent) and tools for online storytelling (19 percent).

Useful Web-Based Services, Resources, and Information
- There were numerous Web resources that respondents reported would be valuable.   The key resources and services to which these college instructors wanted access included online course design and development help (73 percent), electronic papers, journals, and technical reports (71 percent), and online teaching help (70 percent).
- More than half of the respondents valued access to Web-based survey and evaluations tools (59 percent), online simulations and experiments (59 percent), downloadable shareware and freeware (59 percent), online library resources (54 percent), conference information (52 percent), online bookstores (51 percent), discounted hardware and software (51 percent), and online course listings (50 percent).
- A large percentage of respondents also asked for trial or demonstration software (49 percent), online workshops and institutes (48 percent), online mentoring and tutoring services (46 percent), freelance teaching opportunities (45 percent), and online university bookstores and merchandise (35 percent).
- Less important to these college instructors were access to online courseware company listings (21 percent) and discounted instructional resources (19 percent).

Recommendations Based on Findings

Based on these findings, seven key recommendations for college instructors, administrators, and institutions of higher education were generated.   These recommendations relate to instructor training, recognition and support, and sharing of expertise, as well as online learning policy, research, tool development partnerships, and pedagogy.

1. **Instructor Training:** Colleges and universities need to consider how they are training their faculty for online teaching in an online world.   For instance, instructional design support and guidelines should help instructors get acclimated to this new form of teaching.   In addition,

colleges and universities might offer institutes, courses, online mentoring, and instructional design help. Early Web adopters might be utilized as mentors for new faculty members in such training or professional development efforts. Time allocated to training also is a key consideration.

2. **Instructor Recognition and Support:** Colleges and universities need to consider how they recognize online teaching efforts in promotion and tenure. They also could provide release time, instructional development grants, stipends, and other forms of assistance to online instructors.

3. **Instructor Sharing of Expertise and Resource Exchange:** Higher education institutions should create ways for faculty to electronically share services, expertise, and resources as well as mentor new faculty online. They might also develop tools for faculty sharing of activities and resources, including tools for sharing reusable knowledge objects or some type of knowledge exchange program.

4. **Online Learning Policies:** Higher education institutions need to develop clear guidelines or policies regarding the ownership of online course materials and applicable royalties. They should have policies in place related to freelance online teaching at other institutions. They might also consider clearly articulating why certain courseware tools, policies, and expectations have been adopted related to Web-based instruction.

5. **Online Learning Research:** Before adopting new policies, colleges and universities should review existing research. They might also provide internal mini-grants for faculty to research their own course and program development efforts. Similarly, internal research related to the perceived obstacles to online learning as well as case studies of successful faculty adoption may be helpful. Results of such research should be made available to all faculty of the institution.

6. **Online Courseware Development Partnerships:** Rather than every large higher education institution attempting to spend money to develop its own courseware platform or shell, colleges and universities should seek partnerships with courseware and other e-learning companies wherein they serve as beta test sites for new tool development efforts. They might also seek to form tool development consortia with other institutions. Technology centers and research institutes within higher education settings could perform usability studies and help co-develop products in return for lower or nominal courseware fees.

7. **Online Learning Pedagogy:** In conjunction with the last recommendation, higher education institutions need to demand and perhaps help develop and research different types of pedagogical tools for

e-learning that foster student higher-order thinking and collaboration. Once developed, online tools that target critical and creative thinking as well as teamwork online should be showcased for faculty, students, and administrators.

1. INTRODUCTION AND OVERVIEW

Welcome to the first of at least two reports related to instruction on the Internet. The aim of this particular report, "Online Teaching in an Online World," is to understand the online learning experiences, obstacles, supports, and preferences of college instructors across a variety of institutional settings and disciplines. Whereas this initial report focuses on the online learning needs and supports of higher education faculty, the second study, "Online Training in an Online World," addresses similar issues in the corporate training world. After detailing the survey results and conclusions, a set of recommendations are proposed related to online learning in higher education settings.

Perhaps no technology has so swiftly assumed prominence in both educational and commercial settings as the Web. In educational arenas, those who previously found higher education too expensive or physically inaccessible can now access a myriad of online information resources and materials. Ideas and feedback from online expert guests, mentors, and peers are now available in college classes. Finnish instructors and students can collaborate with those in the United States and Korea (Bonk, Daytner, Daytner, Dennen, & Malikowski, in press). Online student mentoring can come from practitioners in the field, experts at the North Pole, or graduate students and colleagues down the hall (Bonk & King, 1998). Collaborative teaming in online college settings knows no bounds, and, not surprisingly, higher education administrators have taken notice. As a result, new instructional expectations for college faculty are emerging.

This survey targeted instructors who were likely to have greater experience with these new teaching methods and tools than others. This final report is intended to provide insights into the future directions of online teaching as well as to identify the gaps in tool and courseware development efforts.

1.1 Previous Reports

Reports from the U.S. federal government point to a recent surge in online course offerings in university settings as important evidence that billions of dollars will be spent on the postsecondary online market during the next few years (Upitis, 1999; Web-based Education Commission, 2000). By 1997-98, more than 50,000 distance education courses were already offered by over 1,000 institutions (National Center for Educational Statistics, 1999). Such figures will only climb in the coming decade.

A report from the Web-based Education Commission (2000) indicates that Web technologies are increasingly used in both online and traditional classroom-based courses. This report also notes that distance learning course offerings are expected to increase from 62 percent of four-year colleges offering some courses online in 1998 to 84 percent of such colleges offering such online course experiences in 2002. As a result, the Commission notes that many higher education institutions are forming consortia and collaborative groups to share course materials and resources in an effort to enhance college teaching and learning.

In terms of specific Web tools, the commission reports a dramatic increase in college faculty utilizing e-mail, Web resources, course homepages, and online discussions within their courses. In fact, they report a 25 percent increase from 1996 to 1999 in college faculty utilizing Web resources in their class syllabi. This report also acknowledges the additional time and risk on the part of faculty who attempt to take advantage of online learning tools and activities in their courses. But why is there a risk? Higher education institutions simply do not yet have the teaching rewards, expectations, or support structures in place for promoting faculty teaching in an online world.

As e-learning environments take center stage in college programs around the world, it is vital to determine the tools and tasks that facilitate student learning in this new context as well as to establish quality standards for such courses. A recent report from the Institute for Higher Education Policy (2000) that was commissioned by the National Education Association and Blackboard, Inc. identified 24 key benchmarks for online learning quality.   These benchmarks addressed course development guidelines, instructional material reviews, student feedback and interaction, access to library resources, technical support, student advising procedures, and the evaluation of intended learning outcomes.

There are a number of other summary reports attempting to describe and evaluate the use of distance education technology in education (Bonk & Wisher, 2000; Phipps & Merisotis, 1999; Russell, 1999; The Report of the University of Illinois Teaching at an Internet Distance Seminar, 1999). Some reports speak to the challenges of teaching in an online world, including issues of compensation, time, ownership, profitability, training, technology infrastructure, and university policies.   Jaffee (1998), for instance, discusses the costs of online instruction as well as the forms of resistance to such courses and programs at both the institutional and individual level (Jaffee, 1998). Others point to new economic markets and opportunities (Upitis, 1999). Such reports document key trends, social demographics, stakeholders, policy makers, major players, and workplace needs (Cronin & Duffy, 1997). Still other reports detail newly formed and tenuous partnerships and consortia.

What about the instructional, psychological, and social aspects of online learning? As indicated above, at least one report has been commissioned to develop guidelines or benchmarks—including many instructional design guidelines—to ensure quality distance education practices (Institute for Higher Education Policy, 2000).   On the social and psychological side of online learning, Joseph Walther and his colleagues (1996; Walther & Tidwell, 1995) point to the social issues embedded in online environments such as student social isolation and shared knowledge. In a more recent report, Bonk and Wisher (2000) summarize the research related to online collaborative tools, e-learning, the role of the instructor, and the increasing importance of learner-centered approaches to instruction.   They also suggest more than two dozen psychologically-based research opportunities in online collaboration related to principles of cognition, motivation, social interaction, and individual differences.

Within the plethora of distance education reports and prophecies, the TeleLearning Network Centers of Excellence (TeleLearning NCE) of Canada have assumed a leadership role related to online learning research. One of their key reports compares eight key post-secondary institutions offering e-learning (Massey & Curry, 1999). In this report, Massey and Curry provide a preliminary analysis of universities emerging in this field such as Stanford University, Nova Southeastern, Western Governors University, Indiana University, the University of Illinois, Open University UK, University of Phoenix Online, and California Virtual University. They offer a competitive analysis of the courses/programs, pedagogy, and learner support structures in place at each of these institutions. In addition, they address expansion plans, marketing, faculty, learners/clients, and course production and delivery mechanisms at each institution. As such, this particular report offers useful insights into the direction of online technologies and course delivery.

While the TeleLearning NCE is a source for online learning reports from Canada, UCLA has recently published an inaugural report on the impact of the Internet on social, political, cultural, and economic behavior and ideas across the United States (The UCLA Internet Report, 2000). While that research investigates Internet usage across the general population of the United States, the data in the present study focus on evaluations of Internet usage in college courses among college instructors likely to use it.

1.2 Current Tension

As the above reports indicate, there is no doubt that the Internet has brought about a new forum for learning and instruction. Higher education faculty and administrators must not only understand the new technologies that present themselves, but they also must grapple with how best to utilize them for student learning. Or as Steven Gilbert (2001) recently noted, "Acquiring the knowledge and skill necessary to improve teaching and learning with technology requires faculty, support professionals, and administrators to think and behave in new ways—deep learning." The challenge, he argues, is for early adopters of technology to push at the educational frontiers in ways that help transform themselves as well as their colleagues with new insights and lifelong learning, while staying within the educational missions and resources of their respective institutions.

But on college campuses there is tension and uncertainty surrounding the use of the Internet in teaching and learning. There is also a lot of hype. Free classes mentioned one day are delayed by downturns in the economy the next. Standards and guidelines are encouraged, but too often not established. Distance learning policies created one year are revamped in the years that follow. Moreover, too many reports speak from an administrator, politician, or corporate executive viewpoint. What is often lacking is a sense of what the faculty member or instructor thinks about the online experience. As a result, few reports reflect on the pedagogical practices that lead to online learning success. It is as if the technology alone is sufficient to build an effective environment for learning. And this, we know, is not the case.

Few can doubt that Web-based teaching and learning is a growing field with rapid changes. In part, it has emerged to fill the void in training as technical skills quickly fall into obsolescence (Oblinger & Maruyama, 1996). Reskilling simply is a fact of life. Online reskilling may be a necessity as the age of learners increases and the time available for one's studies is curtailed by job and family responsibilities. Web-based courses may simply be the only viable option for many learners (Edelson, 1998).

The present study attempts to determine the supports and resources that college faculty have available to meet those needs. Whereas other surveys of online learning in higher education have explored areas such as technological resource availability, instructor skills and attitudes, or institutional policies, this particular study is more comprehensive by attempting to understand instructor attitudes, experiences, preferences, and online support structures, as well as prevalent pedagogical tools and practices. Given this focus, the results of this survey can perhaps help educators design more powerful e-learning environments as well as methods to teach within them. Hopefully, it will serve as a barometer for higher education institutions considering online courses and programs as well as a guidepost for instructors first encountering online teaching in this online world.

1.3 Focus on Pedagogical Practices

There is no doubt that Web-based instruction offers new ways for students to collaborate and for instructors to share pedagogical ideas and practices. It is also a way to expand the resources available to students and build permanent course archives. With the emergence of the Web, it is now possible to involve practitioners, experts, and peers as online learning guides or mentors. Case-based learning can take on a new sense of authenticity as business students chat with company executives, counseling students reflect online about crisis situations faced during internships, preservice teachers peek in on the classroom management strategies of expert teachers, and medical students virtually view sophisticated operations in action.

There seem to be limitless opportunities to exploit the Web in college teaching and learning. As online learning resources accumulate and become archived, there is even a new sense of course history and legacy. Events that were delivered or that unfolded a decade or more ago can be replayed, modified, salvaged, contemplated, and debated at any time.

As a result of all these new instructional opportunities, the decisions confronting the online college instructors are multiplied. Part of this is due to the complexity of these environments that often beg for quick managerial decision making one minute, technological expertise the next, and social or pedagogical intervention just a few moments later (Bonk, Kirkley, Hara, & Dennen, 2001). This survey will help document some of the early pedagogical practices of those deciding to teach online, or, at least, those beginning to utilize online resources somewhere in their teaching practices.

1.4 Purpose of the Study

This report, co-sponsored by JonesKnowledge.com and CourseShare.com, is based on a survey of 222 college faculty members, most of whom have been early adopters of Web-based technology in their instruction. Unlike some of the previous studies, online course quality is just one aspect of this particular report. In addition, this survey report is intended to inform administrators and courseware designers of the benefits and challenges of using Web-based learning tools in higher education settings. It also provides suggestions about the types of tools, activities, resources, and support structures that might enhance online learning in college settings.

This survey report provides descriptive information about the types of college instructors and institutions involved in typical online environments**.** It has five primary goals:
1. To identify the resources, tools, and activities that college instructors desire in their Web-based teaching efforts;
2. To document the gaps between online teaching practices and preferences;
3. To understand some of the key obstacles as well as support structures for Web-based teaching in college settings;
4. To point to online learning tools and communities that might be developed to enhance teaching and learning in higher education settings; and,
5. To determine who is responsible for making online learning decisions in higher education.

In effect, this study intends to document how faculty educators are being trained, supported, and rewarded for online instruction. It also seeks to determine the types of online tools and activities that faculty prefer. Additionally, this survey explores college instructor attitudes related to online learning obstacles and support. It addresses their perceptions of controversial online learning issues such as course ownership and quality, online program accreditation, online teaching and learning opportunities, and the general utility of the Web as a teaching and learning resource. The conclusions are intended to help those teaching in online environments as well as those developing policies and funding new online initiatives. The findings may also be useful to companies developing and evaluating online tools for distance teaching and learning.

2. METHODS AND DATA

2.1 Methodological Overview

As distance learning tensions rise in response to concerns about online pedagogy and policy, we need to understand more from faculty who have crossed some of the first hurdles. Where can one go to look for the early adopters or at least those who are less resistant to incorporating the Web in their teaching? Who are the ones to ask about online teaching practices? While previous research indicates that college instructors too often are not utilizing the most sophisticated technologies and interaction opportunities (Cummings, Bonk, & Jacobs, 2000), nevertheless, faculty members were considered ideal sources for providing information on Web-based teaching policies, experiences, training, and incentives in higher education. In this report, we sampled college instructors who had a history of sharing resources on the Web.

2.2 Sampling Procedures

Our sampling of instructors employing the Web for teaching and learning purposes comes from two separate sources. First, we selected a random sample of names from The World Lecture Hall (WLH). The WLH (http://www.utexas.edu/world/lecture) is an international site first created in 1994 at the University of Texas at Austin to post college syllabi for courses within a variety of academic disciplines. The developers have received national praise and recognition for offering this service.

When beginning to select that sample, however, we noticed the emergence of another resource for faculty and students in higher education called MERLOT.org ("Multimedia Educational Resource for Learning and Online Teaching"). MERLOT was created in 1997 by the California State University Center for Distributed Learning. It has since expanded to consortia of other institutions and state systems. MERLOT is now a fast growing and free resource intended as an online community of shared knowledge and ideas. In contrast to the WLH, the MERLOT site was originally designed for sharing a wide variety of online learning materials, including assignments, reviews, and member profiles across many academic disciplines within higher education. The capability for peer instructors to review online learning materials was the key feature that distinguished MERLOT from other online resource sharing sites at the time of this study.

Even though the WLH and MERLOT members are not representative of all college faculty members, they provide richer online learning backgrounds and experiences than most other available populations. Over 2000 syllabi reflecting more than 80 disciplines and subdisciplines have been posted to the WLH. Those posting syllabi to the WLH include faculty from religious studies, sociology, theater and dance, accounting, philosophy, marketing, zoology, history, neuroscience, astronomy, nutrition, anthropology, rhetoric, law, and electrical engineering. At the time of this study, MERLOT contained over 2000 members representing more than 120 different disciplines. Members of MERLOT include faculty from such disciplines as nursing,

teacher education, business information systems, geology, arts, computer science, political science, evolution, and theoretical mathematics. The combined sample population, therefore, included a variety of disciplines, degree programs, and types and sizes of institutions. It also included a wide range of Web expertise. All these people, however, either had experience posting syllabi online (i.e., the WLH sample) or posting online profiles, critiques, or learning materials (i.e., the MERLOT sample). For some in the sample, however, this may have been just a one-time post or brief comment.

While the WLH and MERLOT were perhaps the most well known Web sites for resource sharing within higher education at the time of this study, we were not aware of surveys of college faculty representing either or both of these sites. Our random sample during November and early December 2000 included 415 instructors from MERLOT and 286 from the WLH, or a total of 701 instructors from a wide spectrum of disciplines at both sites.[1]

From e-mail solicitations to this sample, we collected 222 completed surveys (79 from the WLH and 143 from MERLOT members); the vast majority were faculty or administrators with additional college teaching responsibilities. While our 32 percent response rate was generally lower than direct mail or phone surveys, online survey research suggests that this rate is quite good (Cho & LaRose, 1999). However, at this time, no expected response rate for online surveys has been firmly established.

Nearly fifty different disciplines and subdisciplines were represented in our final sample. Most responses were received from instructors from across the United States, though around 5 percent of the respondents came from other countries including Hong Kong, Australia, Canada, and the United Kingdom.

2.3 Limitations of the Study

As with most online surveys, the present project had several limitations that may have constrained the results and generalizability of the study:

- There are few available resources for faculty online course-sharing, thereby limiting the selection to two of the more popular sites, the WLH and MERLOT. These two Web sites were possibly not representative of all college faculty members who use the Web in their teaching.

- Since users created these sites over long periods of time, many of the collected online faculty member names and e-mail addresses were outdated, incorrect, or changed, especially those in the World Lecture Hall.

- Many of the faculty respondents here were Web savvy and could be described as early adopters of Web technology, thereby inflating any optimistic results

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[1] Note that the original sampling was fairly even across these two sites but there were more expired e-mail addresses or unusuable names from the WLH than from MERLOT, perhaps since the WLH site was older.

regarding online learning experiences and felt need for additional online collaborative tools compared to college faculty in general.

- Tools for teaching and learning on the Web are constantly changing. As a result, it is difficult to generalize many of the findings of this survey related to the utility of particular Web-based instructional tools.

- The online survey instrument was relatively lengthy, effectively lowering the response rate and perhaps causing some inaccurate or skipped responses.

- This survey report labels respondents as college or post-secondary instructors, even though a few of the respondents were in administrative positions with only part-time faculty or teaching responsibilities.

- In an effort to keep the survey at a manageable length, the online survey failed to address key issues such as how courseware tools are funded, the percent of respondents with tenure, the perceived quality of online certificates or institutes, the forms of online training for instructors, the types of technical support provided for students and faculty working online, how costs are determined for online courses, and perceived learning and motivational factors in online learning. It is hoped that future studies will address such issues.

Despite these limitations, the response rate for this online survey was higher than expected for an e-mail solicited Web survey (Cho & LaRose, 1999). In fact, only 7 percent of those solicited in this particular survey explicitly refused to participate.

3. FINDINGS

3.1 Respondent Background

Description of Survey Respondents: Nearly 64 percent of our sample came from MERLOT, while 36 percent were from the WLH (see Figure 1). In addition, the response rate was slightly higher (34 percent) for MERLOT participants as compared to WLH participants (28 percent). These differences in response rate are due, in part, to MERLOT being a recent phenomenon with a more current faculty listing.

Figure 1. Description of Sample (N = 222)
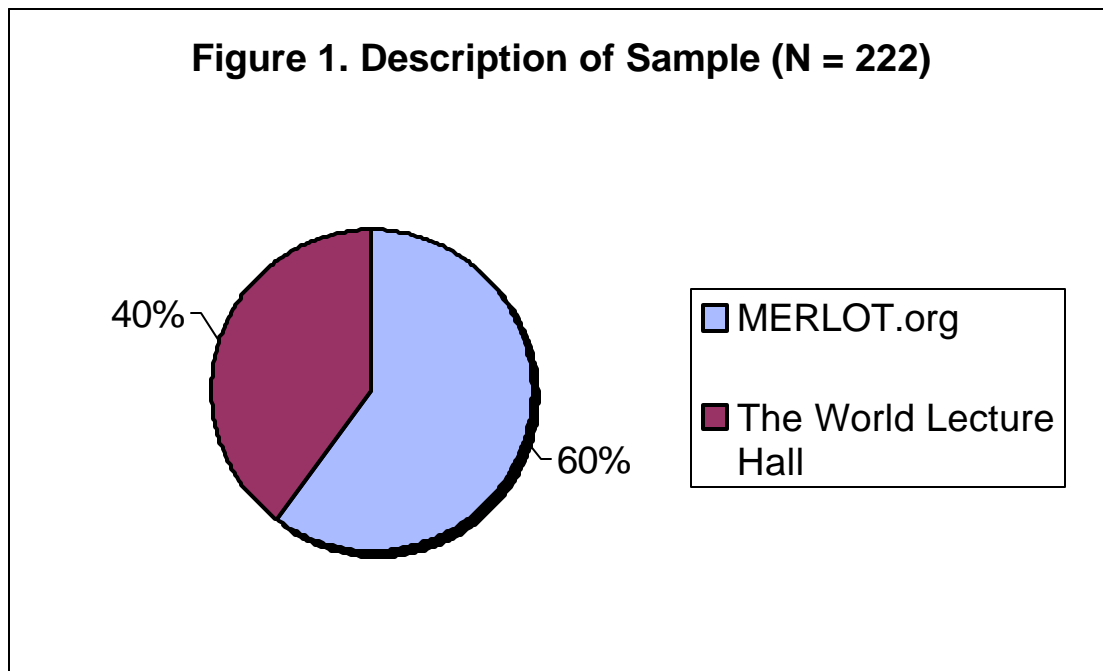
Type and Size of Respondent Institution: National studies indicate that distance education is more prevalent in public than private institutions and in 4-year rather than 2-year institutions (National Center for Education Statistics, 1999). Not surprisingly, then, it appears that college instructors who are active in posting resources to the Web are from those types of institutions. As shown in Figure 2, in this particular study, over two-thirds of our respondents were from public institutions (19 percent from 2-year and 51 percent from 4-year institutions). Only 1 percent came from 2-year private institutions and 20 percent fom 4-year private institutions. Nine percent of the respondents were employed in other types of instructional situations or indicated that they were in a public or private college setting but without noting whether it was a 2-year or 4-year institution. Respondents were three times more likely to be from 4-year than 2-year institutions.

The type and size of institutions ranged from large Research I institutions such as the University of Texas at Austin, Arizona State University, the University of Illinois, and the University of Maryland College Park to more modestly-sized state colleges such as Indiana State University, Northern Michigan University, the University of Wisconsin-

Whitewater, and the University of Akron, to small private institutions such as St. Norbert College, Oberlin College, Nazareth College, and Belmont Abbey College.

Figure 2. Type of Respondent Institutions

Pie chart legend:
- Public, 2-Year
- Private, 2-Year
- Public, 4-Year
- Private, 4-Year
- Other

Values shown: 19%, 1%, 51%, 20%, 9%

N=219
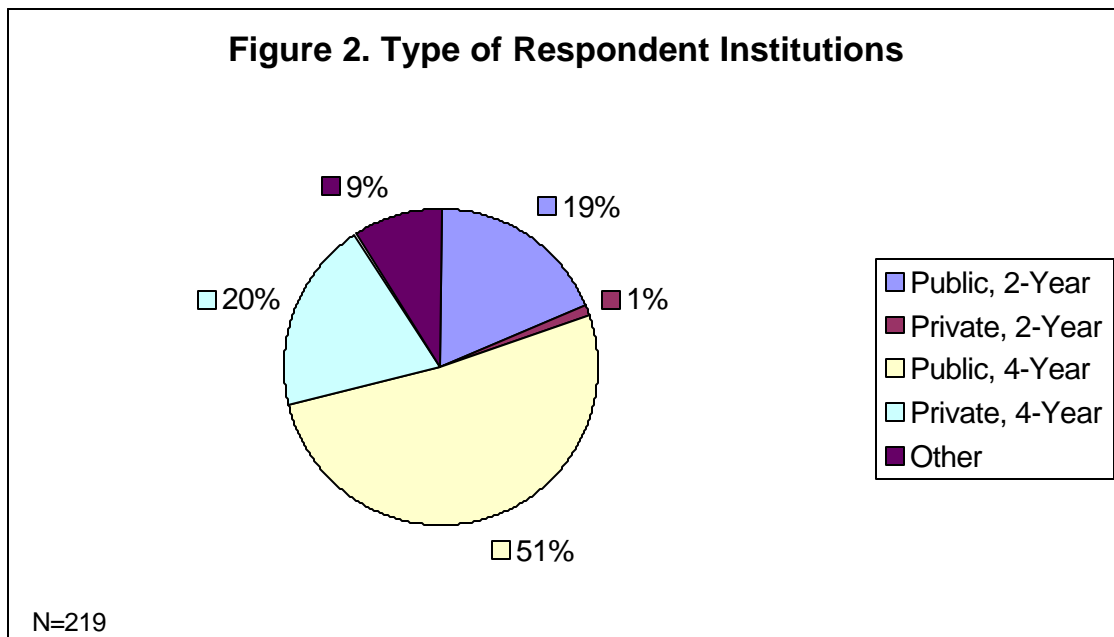
As indicated by reports from the National Center for Education Statistics (1999) and the National Educational Association (2000), distance education is often linked to institutional size. In those previous studies, distance learning faculty members were more likely to work at larger institutions (NEA, 2000). Additionally, distance education courses were more likely to be taught at the larger institutions (National Center for Educational Statistics, 1999). As indicated in Figure 3, in this study, more than 50 percent of the survey participants were from large institutions (i.e., institutions with enrollments of more than 10,000 students). In contrast, approximately 20 percent were from small institutions that had enrollments of less than 3,000. Slightly more than one-fourth of the respondents were from medium-sized institutions.

Figure 3. Size of Respondent Institutions

■ 20%

■ 54%

■ 26%

■ Less than 3,000 students

■ 3,000 - 9,999 students

■ More than 10,000 students

N = 218
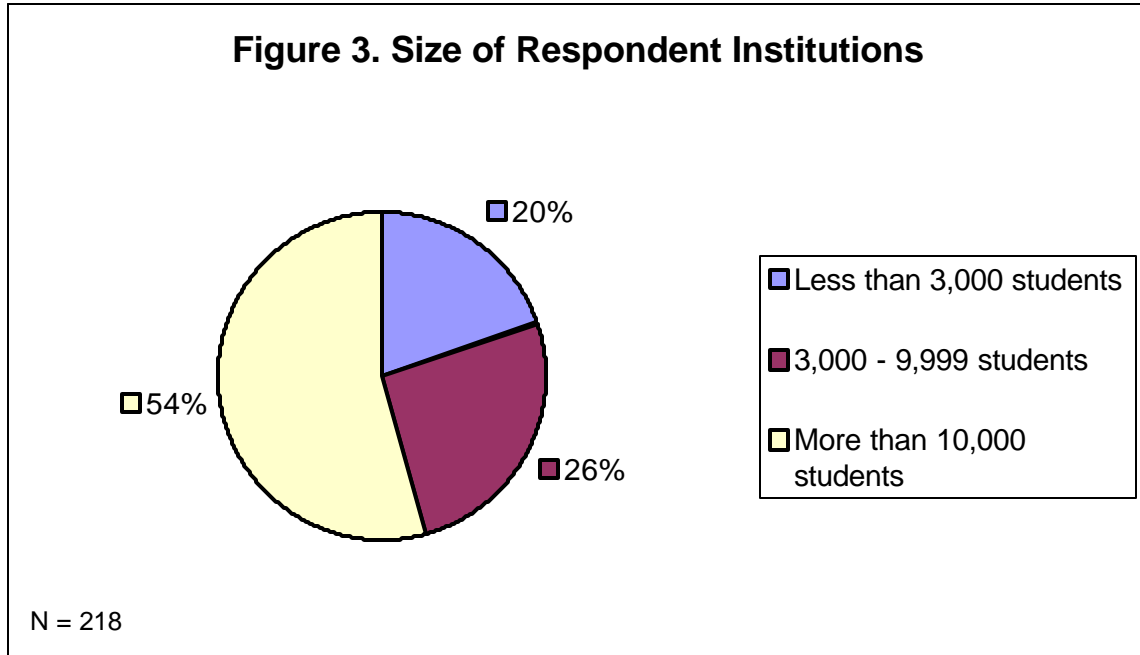
Years of College Teaching Experience: In addition to the institution the participants represented, we also were interested in their teaching experiences. Unlike the NEA study which found that distance learning faculty members tended to be younger and have fewer years of teaching experience, the present study found that college instructors who are willing to share resources online tended to be older and more established (see Figure 4). While 30 percent had 10 or fewer years of experience teaching college, 34 percent had 11 to 20 years of experience, and around 36 percent had more than 20 years of experience. This is an important finding since it reveals that Web-based instructional role models can be found across generations of faculty. It also indicates that there are many established college instructors who can mentor incoming faculty in Web-based practices and experiences. As will be pointed out later in this report, established faculty may have more time available to explore online teaching methods and do so at significantly lower risk.

Figure 4. Years Respondent Has Taught College Courses

- Less than one year — 1%
- One-two years — 2%
- Two-four years — 7%
- 5-10 years — 20%
- 11-20 years — 34%
- More than 20 years — 36%
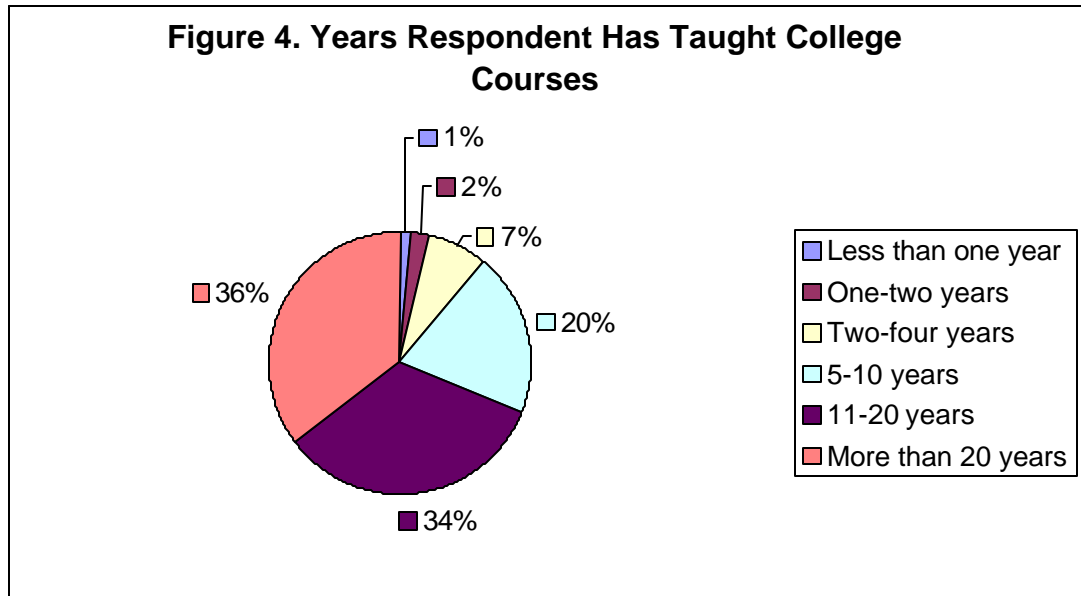
Age of Respondents: Based on the research mentioned previously from the NEA, it was expected that younger faculty members would be sharing resources online more often than older instructors. Surprisingly, nearly half of our respondents were over age 51. Fewer than 7 percent were under age 36 (see Figure 5). These data are somewhat surprising given the conventional wisdom that the Internet is dominated by younger age groups and that older faculty members tend to be more reluctant to use technologies in their instruction. This finding is in contrast to a UCLA report that computer use is nearly double a source of stress for faculty over the age of 45 than for those younger than 35 (American Association of University Professors, 1999, p. 2). Nevertheless, the more recent survey on Internet usage from UCLA also indicated all age groups now utilize the Internet (The UCLA Internet Report, 2000). Even the 2 percent of Web users over age 65 in the present study is quite heartening.

Figure 5. Age of Respondents

Legend:
- 20-35
- 36-50
- 51-65
- 66+

7%
2%
47%
44%
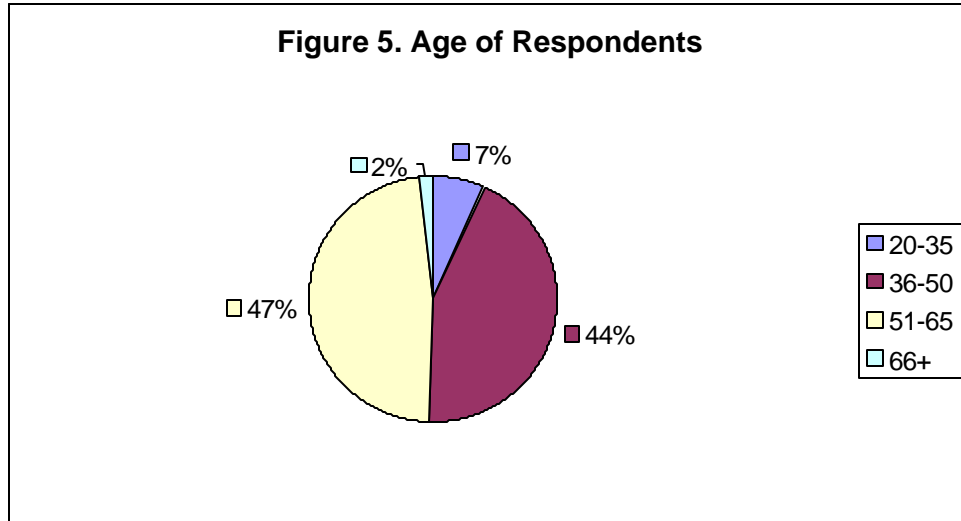
Gender of Respondents: Nearly 60 percent of the WLH or MERLOT respondents were male (see Figure 6). Given the gender-related trends of the past few decades related to both computer experience and use favoring boys (Comber, Colley, Hargreaves, & Dorn, 1997; Shashaani, 1994) and higher education employment figures favoring males (Evans, 2001), this is not too surprising. The gender representation in this sample is reflective of commonly cited gender patterns of higher education faculty (American Association of University Professor, 1999).

Figure 6. Gender of Respondents

Legend:
- Male
- Female

40%
60%
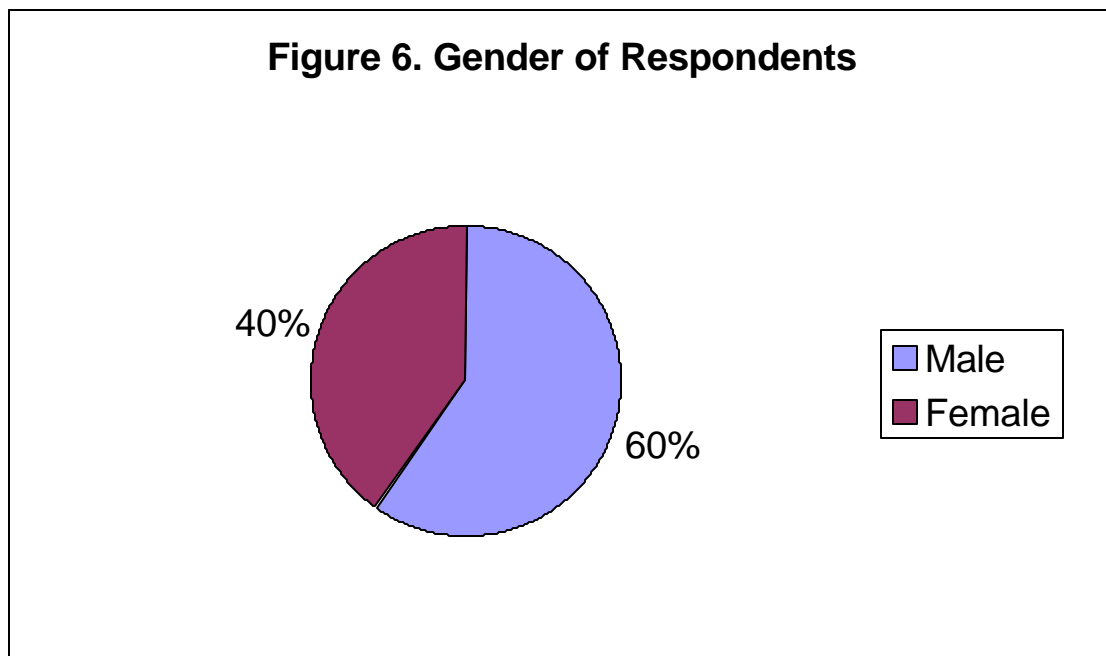
Faculty Rank: The recent NEA (2000) study revealed that distance education and traditional faculty have similar educational backgrounds, professorial ranks or positions (more than a third each at full professor and lecturer levels), and tenure status (more than two-thirds are tenured). In the NEA study, 36 percent of those teaching distance education courses were lecturers and another 7 percent were unranked, or about 43 percent of the total. In contrast, in the present study, lecturers represented fewer than 5 percent of those posting to the WLH or MERLOT and adjunct professors accounted for another 8 percent (i.e., 13 percent of the total) (see Figure 7). In effect, the WLH and MERLOT seem to attract very few lecturers and adjunct instructors. Ten percent of the respondents in this study were classified as "other" (primarily administrators or learning center directors with a current or former faculty position).

So while the NEA data clearly indicated that lecturers and unranked faculty members are involved in Web-based instruction, they are not typically sharing their work electronically with other college faculty in two of the most prominent course-sharing sites—the WLH and MERLOT. And, in contrast to the large unranked or lecturer population in the NEA study, most respondents here were in professorial ranks (60 percent full or associate professors and 17 percent assistant professors).

Figure 7. Rank of Respondents
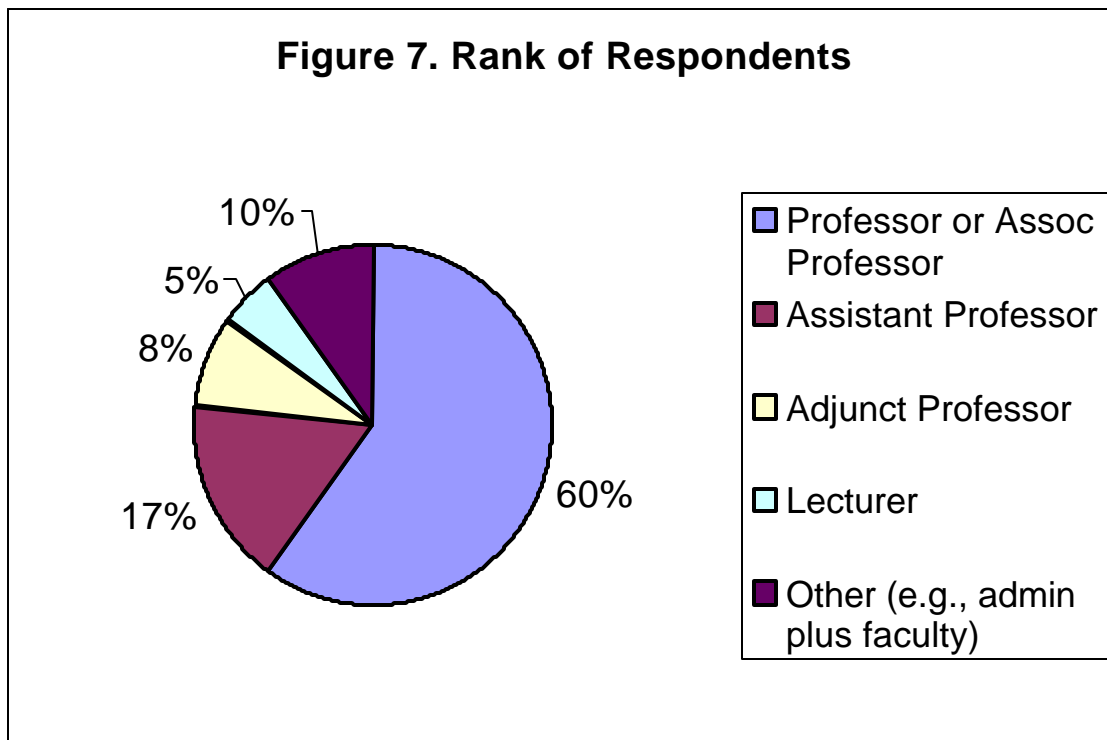
Educational Background: Our sample also differed from the NEA study in terms of educational backgrounds of the participants. In the NEA study, about half of the respondents had master's degrees but only 30 percent had a Ph.D. or Ed.D. In our study, in contrast, 70 percent of the sample had a Ph.D. or Ed.D. and another 6 percent were

ABD, while just 22 percent had a master's as their highest degree held (see Figure 8). Thus, college faculty members involved in sharing course resources online appear to have more extensive educational backgrounds than other distance education faculty. The determinants of these differences (e.g., time, expectations, experience, support, skill, etc.) are unknown.

Figure 8. Educational Attainment of Respondents
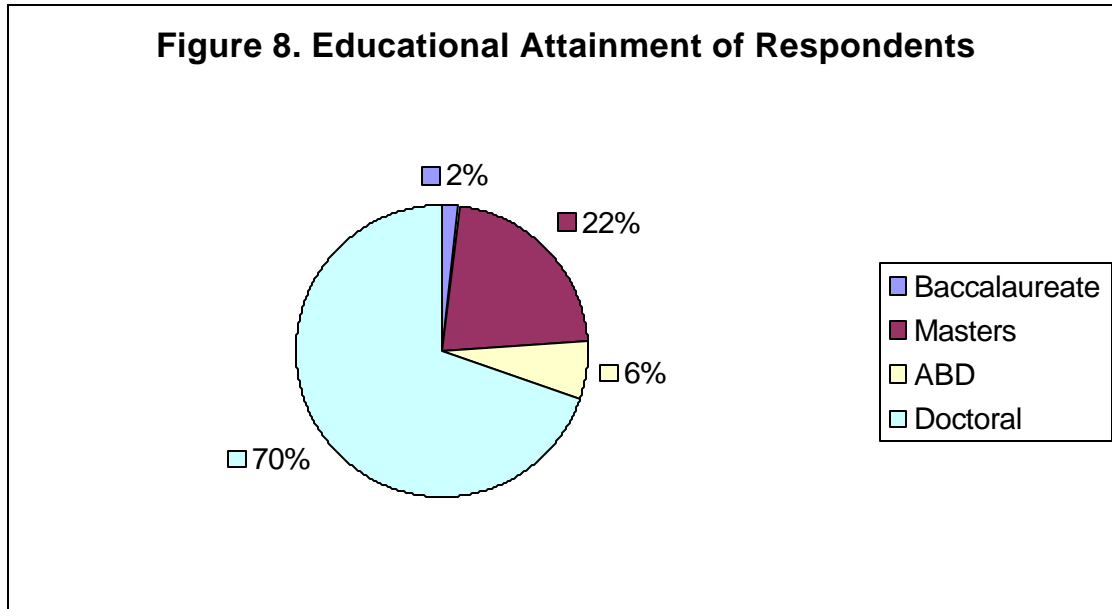
Level of Courses Taught: It was also deemed useful to find out what type of courses these instructors taught. Given the amount of negative press about the lack of undergraduate level involvement of college faculty from Research I institutions, it was encouraging that almost all respondents had undergraduate teaching experience (95 percent) (see Figure 9). Still, more than 60 percent had taught at the graduate level. Perhaps most interestingly, over forty percent had taught non-credit or other types of courses such as workshops, enrichment programs, or training courses.

Figure 9. Type of Classes Respondents Teach*

*Categories are not mutually exclusive
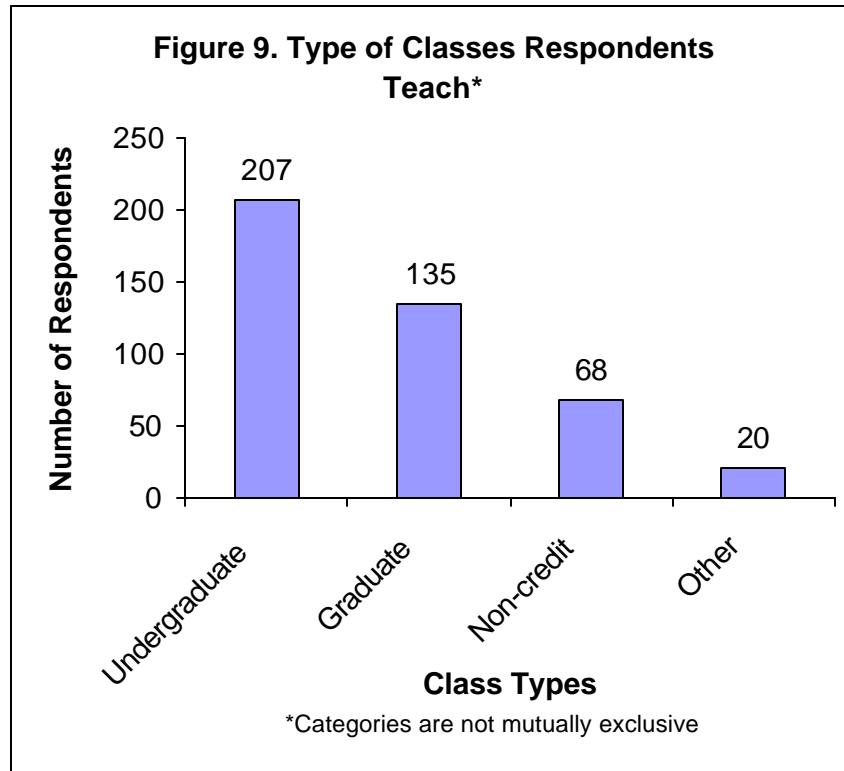
3.2 Participation in Online Course Sharing

When Do They Share?: The emergence of online course sharing is a relatively new phenomenon. In fact, 54 percent of respondents first posted to one these two Web sites— the WLH and MERLOT—within the past year, and an additional 17 percent within the past two years. The remaining 29 percent indicated that they posted more than two years ago. While these numbers are reflective of how long these sites have been available, a culture of sharing online resources seems to be emerging. It might be the case that sites such as the WLH and MERLOT have simply become more popular among faculty during the year leading up to this study. Or, perhaps, sufficient Internet access and speed finally exists for college faculty to share resources online.

How Did They Discover Sharing Resources?: We were interested in finding out how the college faculty members discovered sites for sharing resources online. Thus, we inquired as to how they heard about the WLH or MERLOT resources. Fewer than 5 percent had heard about them through advertisements, and, surprisingly, none listed a friend as an important source (see Figure 10). More typically, they had learned about these resources through their institution (25 percent), a colleague (27 percent), an Internet link (39 percent), or through other means such as mailing lists, journal articles, special interest groups, or conferences (16 percent). Thus, the most effective communication channels were professional contracts or electronic communications.

Figure 10. How Respondents Discovered the WLH or MERLOT*

(Bar chart: Y-axis "Number of Respondents" from 0 to 100 in increments of 20. X-axis "Information Sources" with categories: Friend ≈ 0, Advertisement ≈ 10, Institution ≈ 53, Colleague ≈ 59, Internet Link ≈ 85, Other ≈ 35.)

Information Sources
*Categories are not mutually exclusive
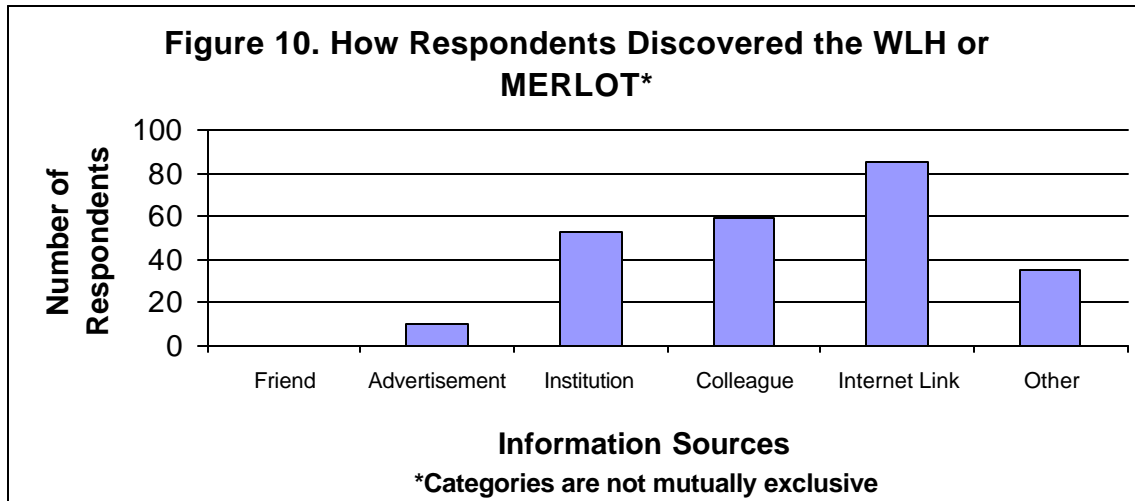
Why Share?: In addition to asking how the faculty respondents in our study were informed of these resources for online course sharing, we asked why they posted to these sites. As indicated in Figure 11, around 8 percent responded that their institution or department required them to do so. Approximately twice as many respondents (16 percent) claimed to have posted to these sites as a means of marketing themselves to other colleagues. About the same number indicated that they posted to one of these sites as a pedagogical experiment, while another 16 percent became active in the site for fun. Thirty-eight percent of those posting simply wanted to share pedagogical theories or strategies with their colleagues. Slightly more (45 percent) were active in one or more of these sites in order to grow as professionals. The most frequently selected response was that they simply believed in the importance of course sharing (53 percent). Around 18 percent gave other reasons for their affiliations to the WLH or MERLOT. For instance, several respondents noted that they were asked by Merlot officials to join, while a few others indicated that someone else posted their name or information.

Figure 11. Reasons Why Respondents Posted to the WLH or MERLOT*

(Bar chart: Y-axis "Percent of Respondent" from 0 to 60 in increments of 10. X-axis categories: Required ≈ 8, Market Self ≈ 16, Course Sharing Important ≈ 53, Share Theories or Strategies ≈ 38, Experiment ≈ 16, Growth ≈ 46, Fun ≈ 17, Other ≈ 18.)
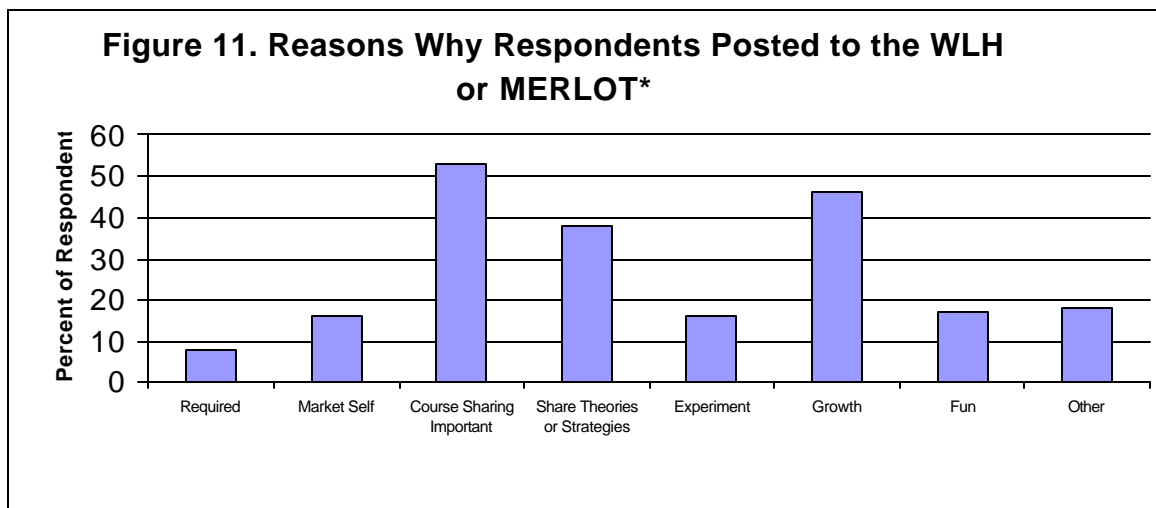
Type and Number of Resulting Contacts: We also inquired about the type and number of contacts that these faculty respondents received as a result of posting resources or information to one of these two Web sites (see Figure 12). Of the faculty completing this item, sixty-one percent were contacted by others after sharing their syllabus or profile on the Web. The data here are varied and interesting. Twelve percent of the respondents had been contacted by researchers, while nearly three times as many (i.e., 32 percent) were contacted by other instructors. In addition, more then 30 percent had been contacted by students not in their courses. Interestingly, 14 percent had been contacted by publishers and 12 percent by other companies and institutions. Such findings reveal the marketing and networking potential of online resource sharing. Not only are students attracted to one's class after reading an online syllabus, but textbook publishers, researchers, and other institutions are also knocking on one's door.

Figure 12. Types of Contacts Due to Sharing*
(*Note: These categories are not mutually exclusive; for instance, many were contacted by more than both students and instructors.)
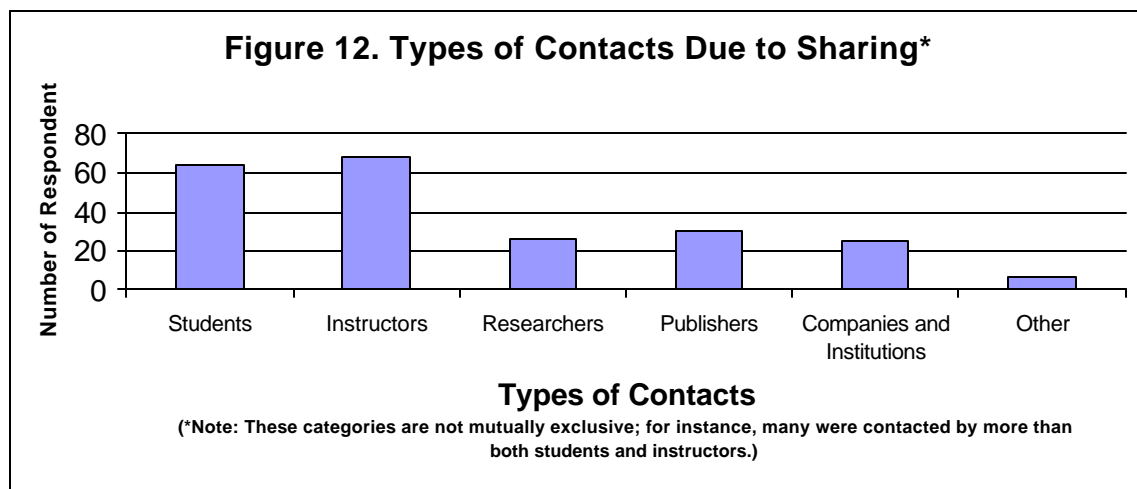
We were interested in determining the average number of contacts for each group described previously. Whereas contacts by publishers, institutions, and other companies were relatively infrequent, a number of people indicated that they had been contacted by students or instructors more than ten times as a result of their online resource contribution or membership. Perhaps it is the course marketing and enhanced collegiality that instructors find most appealing about these course-sharing resources. In fact, more than ninety percent indicated that comments from colleagues on their syllabus or other posted course resources would be helpful.

3.3 Attitudes about Online Learning

Course Material Ownership. No matter what the motive, there are a myriad of issues confronting those teaching online. Some of these issues relate to costs and benefits, copyright, ownership, quality, and compensation.

One issue, ownership of course materials, is a particularly sensitive topic since course materials are now more mobile than in the past (Twigg, 2000). Policy recommendations here are not simple since faculty might own course materials (e.g., text, images, graphs, lectures, readings, simulations, animations, video clips, diagrams, etc.), but not the courses. In recapping discussion from an invited symposium of higher education leaders, Carol Twigg (2000) details a range of potential situations and issues surrounding ownership of online courses and materials. Her report recommended, "that the default policy position for all institutions should be that the faculty member own the course materials he or she has created." She points out that institutions could have mechanisms in place that spell out situations or conditions wherein a secondary policy would come into play (e.g., reserving the right for royalties).

Faculty in the present study held similar views (see Figure 13). Only 16 percent of faculty members completing this survey agreed that online courses were the property of an institution; 63 percent disagreed. Keep in mind that this particular survey question concerned courses, not course materials. It is likely that the attitudes would be even stronger in regards to specific course materials.

Figure 13. Online Courses are the Property of an Institution, Not an Instructor

- Strongly Agree 4%
- Agree 12%
- Unsure 21%
- Disagree 29%
- Strongly Disagree 34%
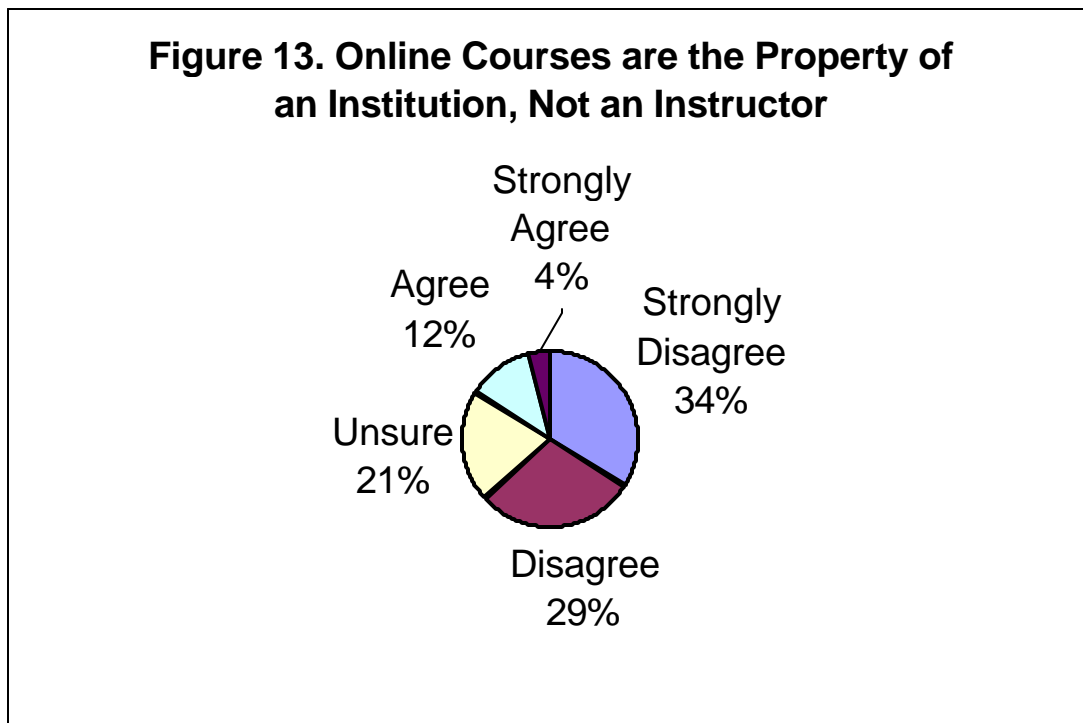
Perhaps these figures are due, in part, to the fact that only 31 percent of those responding to the survey indicated that their institution had clear policies regarding ownership of course material (see Figure 14). In addition, more than a quarter of those responding to this question were unsure. As Twigg's (2000) report indicated, this is a complex area

that higher education institutions need to start addressing more fully so that both faculty and administrators have a clear understanding of university policy on this issue.

Figure 14. Respondent Institution has Clear Guidelines Regarding the Ownership of Course Materials

Strongly Agree 8%

Strongly Disagree 19%

Agree 23%

Disagree 25%

Unsure 25%
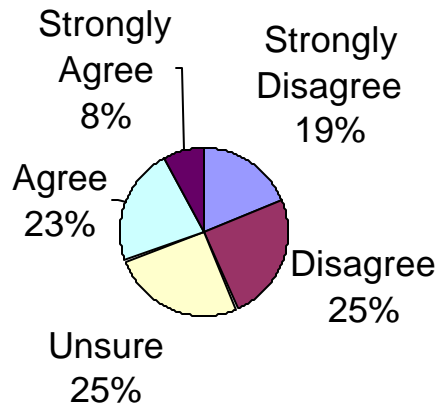
Despite the lack of clarity regarding ownership of the rights to online courses, more than three-fourths of the faculty members completing this survey indicated that they planned to abide by the ownership guidelines of their home institution, while 19 percent were unsure if they would. Such responses make it imperative that institutions of higher education clearly state their policies regarding course ownership.

Course Quality. Another commonly debated issue is online course quality. When asked about whether the quality of learning is improved in online environments compared to traditional learning, faculty member opinions were fairly divided. Nearly 40 percent of the respondents reported that they were unsure, while 32 percent noted that course quality was, in fact, improved, and another 29 percent said that it was not. Such division among early Web adopters is a clear indication that additional research on learning outcomes is needed. As the NEA (2000) study points out, those teaching traditionally hold a less positive view of Web-based courses than those actually teaching via distance education. But even among those teaching online, there are some distinct differences of opinion.

Quality of Degrees. As another indicator of faculty views about online course quality, these faculty members were asked about whether they were opposed to bachelor's, master's, and doctoral degrees earned entirely online (see Figure 15). Not surprisingly, the responses were less favorable for online doctoral degrees than bachelor's and master's degrees. While around 45 percent thought that online bachelor's or master's degrees were legitimate, only 29 percent agreed that doctoral degrees should be available

entirely online.   For all degrees, the percent of respondents strongly supporting degrees earned entirely online was under 20 percent.

Figure 15. Comfortable with Degrees Earned Entirely Online
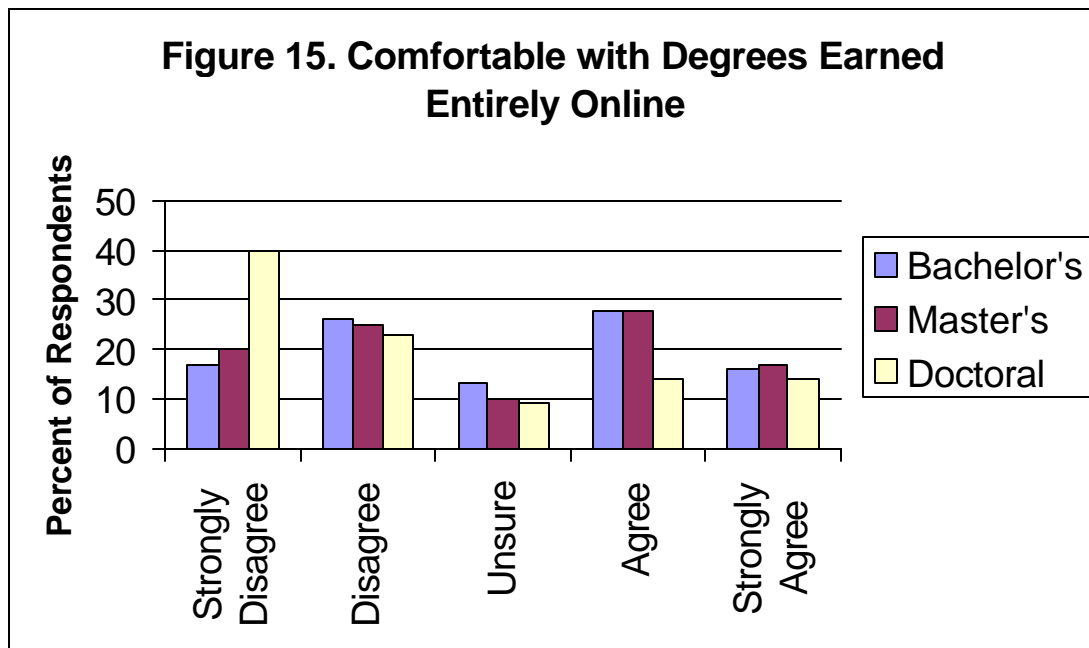
Accreditation.   Sally Johnstone (2001) recently pointed out that many new organizations are emerging to accredit online programs.   However, she also noted that "there are about 100 accrediting bodies that are unrecognized by both the U.S. Secretary of Education and/or the Council for Higher Education Accreditation" (p. 22).   Johnstone argues that online education requires speedier responses in terms of accreditation than has been the norm.   As a result, many regional accrediting associations are rethinking and reorganizing their accrediting processes and procedures.

In terms of quality, our faculty respondents were believers in the importance of distance education accreditation (see Figure 16).   In fact, 80 percent agreed or strongly agreed that accreditation for online distance education is necessary for ensuring academic quality for students.   Perhaps this is not too surprising given the high number of respondents that came from large four-year institutions.   We suggest some caution in interpreting these findings, however, since faculty members teaching online at small private universities or at virtual universities may have answered this question quite differently.

Figure 16. Accreditation for Online Distance Education Providers is Necessary for Ensuring Quality for Students

Strongly Disagree 2%
Strongly Agree 35%
Disagree 7%
Unsure 11%
Agree 45%
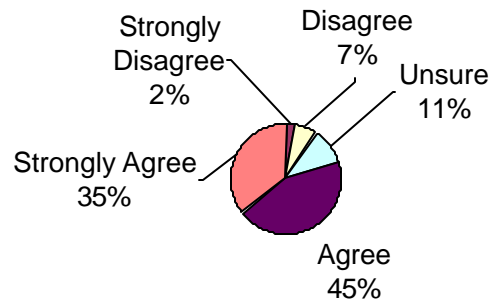
Instructor Compensation for Online Teaching. Another major issue, of course, is rewarding faculty who teach online (Culp, Riffee, Starrett, Sarin, & Abrahamsen, 2001). The traditional publish or perish focus of research-intensive universities forces many young faculty members to avoid pedagogical innovations with technology. Perhaps this accounts for the fact that our sample was older and at higher professorial levels than expected. As cited in Dukart (2001), Lucio Teles argues, "Universities do not have the infrastructure to support online teaching as they do for face-to-face teaching." In terms of compensation, the NEA report, mentioned earlier, showed that distance learning faculty members tend to make comparable wages to those teaching in more traditional settings. Yet, both sets of faculty members were concerned that they would not be compensated for intellectual property and that they would encounter more work for the same pay. In that study, only 22 percent of college educators teaching via distance learning received a reduction of course load. Despite these additional burdens, most of those teaching distance learning courses do so voluntarily.

In the present study, instructors were asked how those teaching online should be compensated (see Figure 17). One-third indicated that additional salary would be the method of choice. Other answers were fairly equally represented including stipends to spend how they wished (14 percent), course royalties (15 percent), and release time (10 percent). Release time was a common write-in response and would likely have been much higher had it been among the listed options. Awards or recognition was selected by only 4 percent of the faculty. Across these answers, some type of monetary commitment is preferred with 63 percent choosing stipends, royalties, or additional pay. Still, nearly 20 percent responded that instructors should receive no additional compensation for teaching online courses beyond their normal course pay.

Figure 17. Suggested Instructor Compensation for Teaching Online
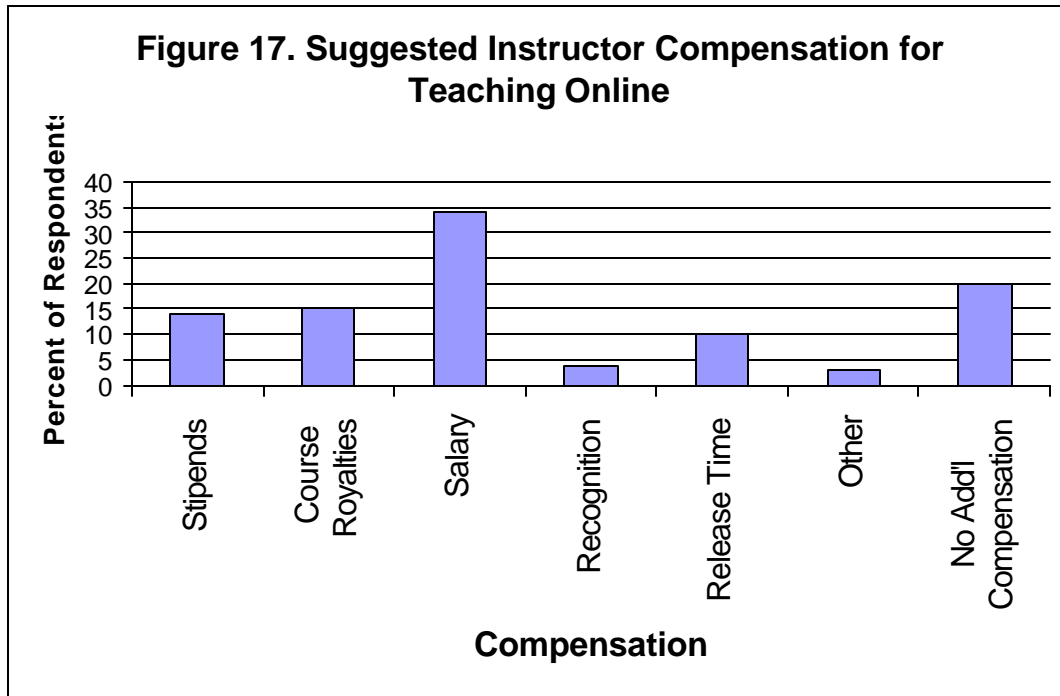
3.4 Current Online Teaching Situation

Online Experience.   While the vast majority of our survey respondents had been active in posting course resources, syllabi, or personal information on the Web, not all had previous experience in Web-based instruction (see Figure 18).   Nearly a quarter of the respondents had never taught even a portion of a course online.   On the other hand, nearly 4 in 10 respondents had taught courses partially online; among this group, the average number of partially online courses taught was about four.   Another 18 percent had experience teaching fully online courses, with an average of five such courses.   In addition, 19 percent had done both—partial and completely online courses—with an average of 10 such online course experiences (though this dropped to slightly fewer than 7 when an outlier was removed).

Calculations across these responses indicated that nearly 4 in 10 early Web adopters had taught completely online courses, while nearly 6 in 10 had taught at least part of a course online.   Given these data, the respondents in this study certainly had extensive online teaching experiences on which to base their survey answers.

Figure 18. Online Teaching Experiences

Partially and
Completely
18%

None
24%

Completely Online
19%

Partially Online
39%
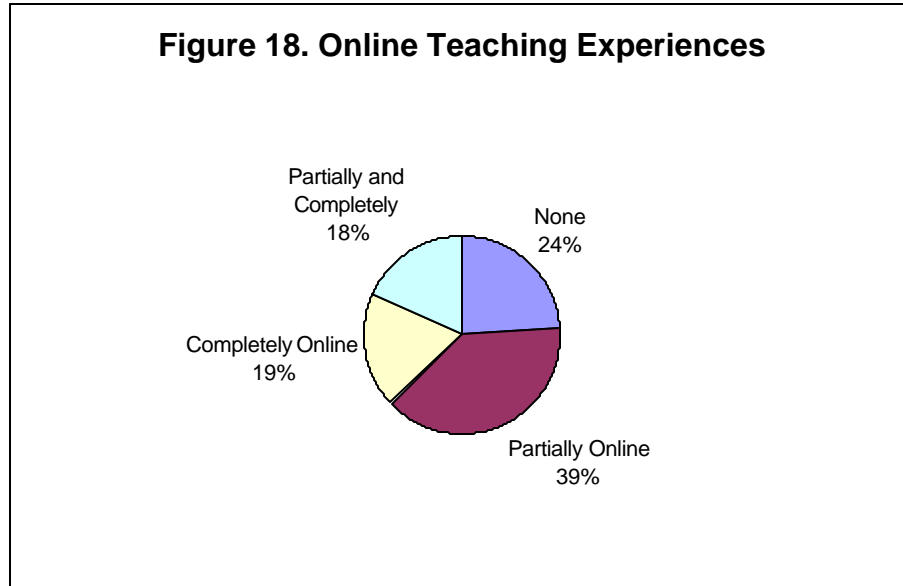
Respondent's Web-Related Skills. An instructor's degree of comfort in using different Web technologies has a direct bearing on classroom practices as well as the decision to teach even part of a course online. When instructors are hesitant or lacking in confidence, there is less likelihood for innovation and risk taking. Therefore, we asked these early Web adopters about their degree of comfort with the following Web skills: (1) creating HTML pages, (2) hosting an online chat, (3) sending and receiving file attachments, (4) using Web-based courseware systems, and (5) moderating a Web-based asynchronous discussion (see Figure 19).

The responses were interesting. For instance, over 90 percent of these faculty members felt a high degree of comfort sending and receiving file attachments in e-mail. Fewer than one percent of respondents were uncomfortable with this skill. Somewhat surprisingly, 62 percent were highly comfortable with creating HTML pages and another 20 percent had a medium level of comfort. However, this acknowledged degree of comfort likely includes a range of skills from using standard software options such as "save as HTML" to actually being facile with HTML and other programming code. The degree of expertise with HTML remains a question for future surveys.

These early adopting faculty were somewhat less comfortable moderating a Web-based asynchronous discussion forum or bulletin board. Still, nearly 50 percent rated their degree of comfort as high, while another quarter of them reported a medium level of comfort. Similarly, 44 percent were highly comfortable with Web-based courseware systems and another 34 percent felt moderately comfortable. On the low end was comfort with hosting an online chat session. Perceptions of online chat tools were roughly split across low, medium, and high comfort categories.

Figure 19. Degree of Comfort with Web Skills
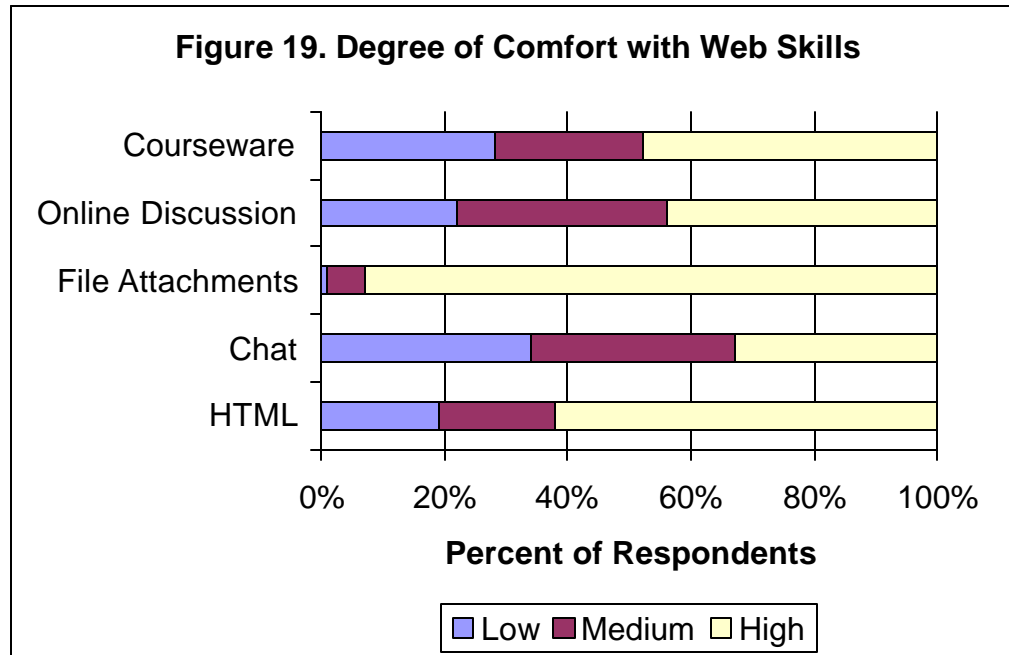
These results indicate that these faculty members possessed at least some basic technology skills. Perhaps, as the NEA (2000) survey of traditional and distance learning higher education members revealed, workshops and training sessions on teaching via distance learning are now readily available. While such a skill base and comfort level may be expected of these early Web adopters, many of these faculty members are either taking advantage of university training and support or are engaged in a heavy amount of self-teaching in regard to Web-based teaching tools. Or perhaps they are overstating their skills. In fact, latter sections of this report reveal a somewhat different picture.

Time Commitments. In terms of overall time investment, these college instructors almost unilaterally agreed that teaching online is more time-consuming than traditional classroom-based instruction. As shown in Figure 20, more than 4 in 5 faculty agreed that teaching online courses requires more time than traditional courses. Fewer than 10 percent disagreed with that statement. Once again, this is consistent with the NEA (2000) report finding that more than half of college faculty teaching via distance learning spent more time on their online courses than their traditional ones regardless of the number of students or times they had previously taught the course. Such findings point to a need for greater course support and incentives that could ease time pressures felt by instructors involved in online teaching.

Figure 20. Teaching Online Courses is More Time-Consuming than Teaching Traditional Courses

Strongly Disagree 2%

Disagree 6%

Unsure 10%

Strongly Agree 41%

Agree 41%
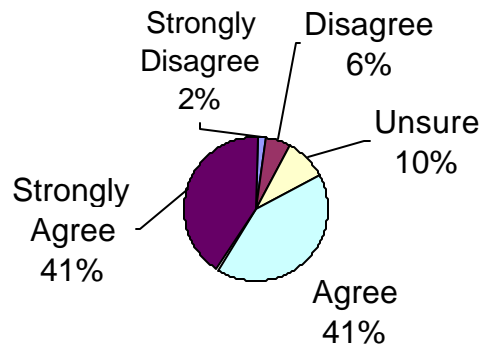
Attrition. Some reports and media releases contend that students are more likely to drop online courses than traditional ones (Phipps & Merisotis, 1999). Those utilizing a mixed mode or blended approach--traditional and online in the same course--were less likely to experience significant student attrition than those teaching completely online courses. In fact, only 29 percent of those utilizing a blended approach experienced more than 10 percent drop the their courses, whereas 44 percent of those teaching completely online courses had more than 10 percent drop their course. Perhaps more strikingly, only 2 percent of blended courses experienced more than a 50 percent attrition rate compared to 10 percent of the completely online courses with such huge attrition rates.

Internet Access. Computer access does not appear to be a problem for these early adopters of Web technologies. Seventy-eight percent of these college instructors had Internet access in their current or most recent classroom. Computer lab accessibility was even higher with 93 percent indicating that they had access to an Internet-connected computer lab for class use. Even more, 97 percent, had Web access from home. This is more than double the 47 percent of Americans who are users of the Internet at home as reported in a recent UCLA study (The UCLA Internet Report, 2000). Such high level of technology access is not too surprising given that the majority of the respondents were early Web adopters who had a high level of education.[2] In effect, these findings indicate that access to computers and Internet resources is no longer an obstacle for many college faculty.

Platform Choices and Preferences. The delivery platform for online courses is a significant factor in faculty online teaching experiences. Eighty-three percent of the respondents to this survey indicated that their institution provided a Web-based platform or courseware system for developing online courses or enhancing on-campus courses with online features. Our survey data also indicated that many institutions are utilizing

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[2] In the UCLA report, 86 percent of college educated and holders of advanced degrees were Internet users.

more than one courseware package. In fact, 22 percent of the respondents worked at institutions that provided access to more than one Web courseware or conferencing platform; when excluding those having yet to adopt a Web courseware system, this figure increases to 27 percent. Moreover, 10 percent provided access to three courseware systems or conferencing tools, and 5 percent had four or more systems or tools available.

When asked what is missing from the courseware tools that they use, slightly over half of the respondents at institutions supporting at least one courseware platform offered some ideas. The specific features mentioned in their open-ended responses included:

> ➢ Ability to annotate documents and visuals in real-time,
> ➢ Better grade reporting systems (including grading summaries),
> ➢ Collaborative white boards,
> ➢ Collaborative working tools,
> ➢ Drawing software,
> ➢ Easy ways to create animations,
> ➢ Effective drop box tools,
> ➢ Efficient ways to display mathematical notation,
> ➢ Electronic library resources,
> ➢ Good real-time chat tools,
> ➢ Improved quizzes,
> ➢ Options for chatting and using PowerPoint at the same time,
> ➢ Private asynchronous rooms for group work,
> ➢ Proctored testing,
> ➢ Streaming video,
> ➢ Three-dimensional concept visualization tools,
> ➢ Tools for tracking student statistics, and,
> ➢ 24/7 support.

Of course, many of the above tools already exist in the common courseware platforms used in higher education. Other features, such as "options for chatting and using PowerPoint at the same time" are available in various synchronous presentation and collaboration tools often found in corporate training settings.

Some general design features requested by these respondents included simplicity, ease of use, user friendliness, enhanced speed, less ugly designs, less cumbersome interfaces, customizability, integration across areas of campus, and flexibility to organize content. In general, there appeared to be a call for more professional appearance, easy to use features, and functional or usable tools.

When asked what they liked about their present courseware tools or system, 56 percent of the respondents offered ideas, many of which were similar to those detailed above. Instructors preferred:
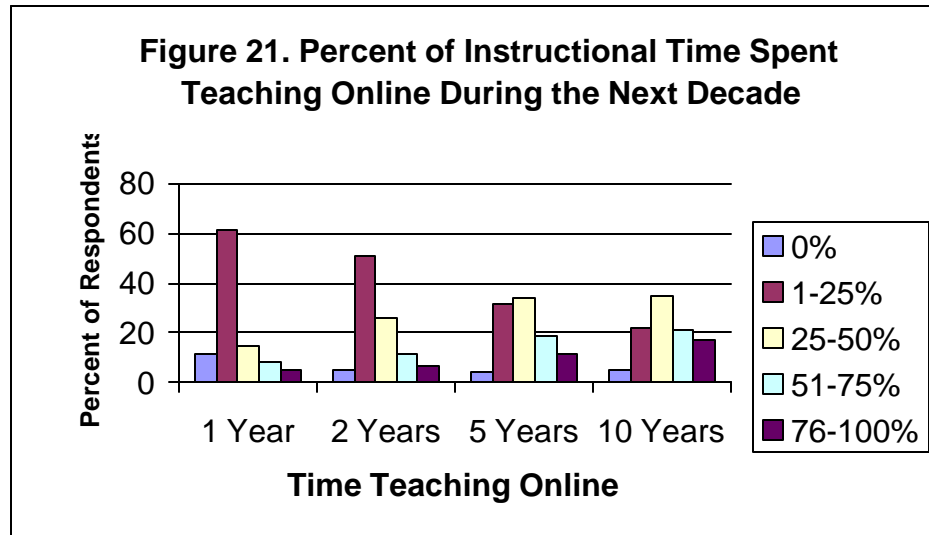
> ➢ Ability to link in lectures with PowerPoint presentations,
> ➢ Assignment sections for students to pick up homework,
> ➢ Chatrooms,
> ➢ Comprehensive tools,

➢ Consistent course appearance,
➢ Customizability,
➢ Data and course security,
➢ Detailed statistics on bulletin board use,
➢ Ease of use,
➢ Flexibility,
➢ Good online help,
➢ Internal e-mail systems.
➢ Online discussion boards,
➢ Password access,
➢ Posting of assignments on the Web,
➢ Posting of deadlines and due dates,
➢ Randomized test banks,
➢ Reliability,
➢ Student drop boxes, and,
➢ Versatility in quiz types.

3.5 Future Online Teaching Situation

Predicted Instructional Time Online. Given that many of those surveyed were likely among the technology leaders at their respective institutions, it was important to ask about the percent of time they anticipated teaching online in the next 1, 2, 5, and 10 years. Interestingly, as detailed in Figure 21, while just under a third of these faculty members anticipated teaching more than one-fourth of their teaching load online one year from now, this increased to 43 percent of the respondents in two years, 61 percent in five years, and 59 percent in 10 years. The reason there was a drop-off in the 10 year data was due to a dramatic increase in those not anticipating to be teaching a decade from now (from 4 percent in one year to 20 percent in 10 years). Once again, the age and experience level of these instructors would indicate that many of them plan to retire before the decade is out.

When excluding the data related to those retiring or not teaching, the predictions regarding online teaching commitments were even more striking. The percent of respondents who anticipate devoting more than one-fourth of their teaching load to online activities increased as follows: 27 percent in one year, 44 percent in two years, 64 percent in five years, and 73 percent in ten years. Those predicting that at least half their teaching load would be online increased from 13 percent in one year to nearly 50 percent in ten years. And those expecting 75 to 100 percent of their teaching to be online increased from 5 percent a year in 2001 to 17 percent at the end of the decade. Hence, the college instructors responding to this survey expect the Web to become an even more vital instructional tool during the upcoming decade. Though most respondents do not view it as a replacement for all of their teaching activities and requirements, this finding indicates that Web-based teaching expectations will soon be common.

Figure 21. Percent of Instructional Time Spent Teaching Online During the Next Decade

A bar chart titled "Figure 21. Percent of Instructional Time Spent Teaching Online During the Next Decade". The y-axis is labeled "Percent of Respondents" ranging from 0 to 80. The x-axis is labeled "Time Teaching Online" with categories: 1 Year, 2 Years, 5 Years, 10 Years. The legend categories are: 0%, 1-25%, 25-50%, 51-75%, 76-100%.

Freelance Instruction. In addition to predictions of increased online teaching loads within university settings, many college faculty members will likely encounter a myriad of new opportunities to teach for other institutions online. Whether "star" faculty members will be hired guns within the online teaching world is not yet known. Instead, what is occurring already is the use of college instructors as freelance instructors in online institutions. These faculty members might work for multiple institutions, teach online during breaks or in the summer, or perhaps even take a leave from their institution to attempt to earn an income teaching online. Other freelance instructors might include practitioners in the field wanting to keep one foot in academia, recently minted Ph.D.'s struggling to find tenure-track positions, and graduate students seeking relevant teaching experiences.

Fueling such freelance needs, many institutions are offering new online courses or programs without expanding their faculty lines, thereby forcing them to find adjunct faculty or add to present faculty teaching loads. The scenarios leading to freelance instruction are certainly complex. Figure 22 reveals that 16 percent of the faculty respondents in this study had experience as freelance or adjunct online instructors. However, in the next five years, 75 percent of these respondents indicated that they believed that they would be interested in teaching as freelance or adjunct online instructors. There definitely is potential here for someone to help coordinate and manage freelance instructor services. Perhaps pending retirements of our respondents factor into these predictions, but other considerations may include additional online course opportunities and expected increases in Web tool availability and reliability.
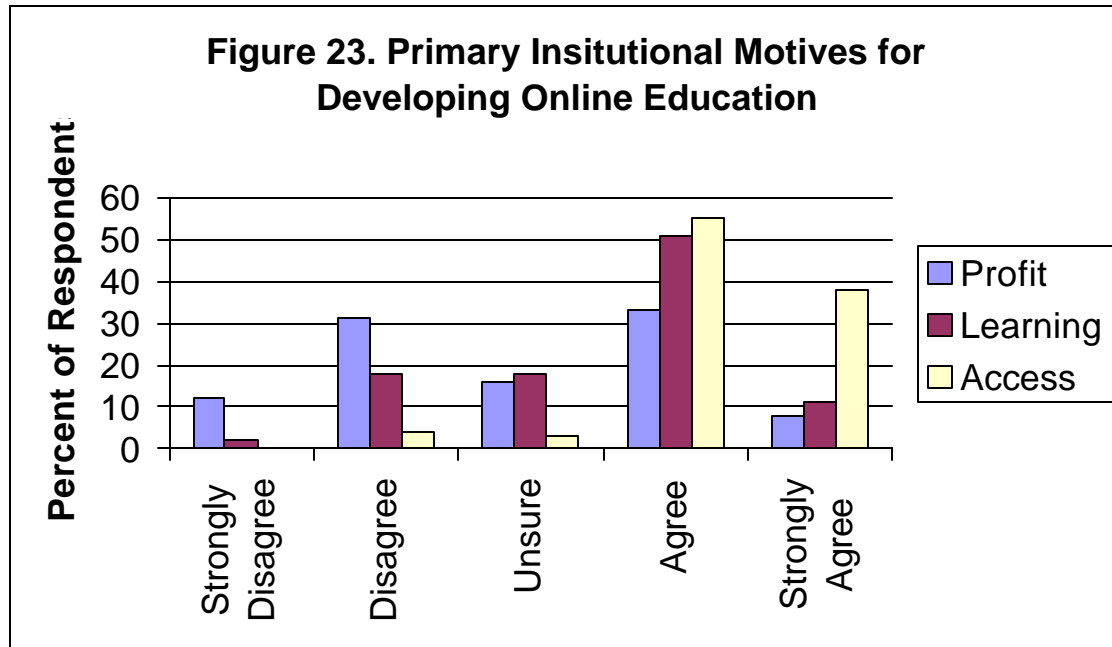
Figure 22. Freelance or Adjunct Web-Based Teaching
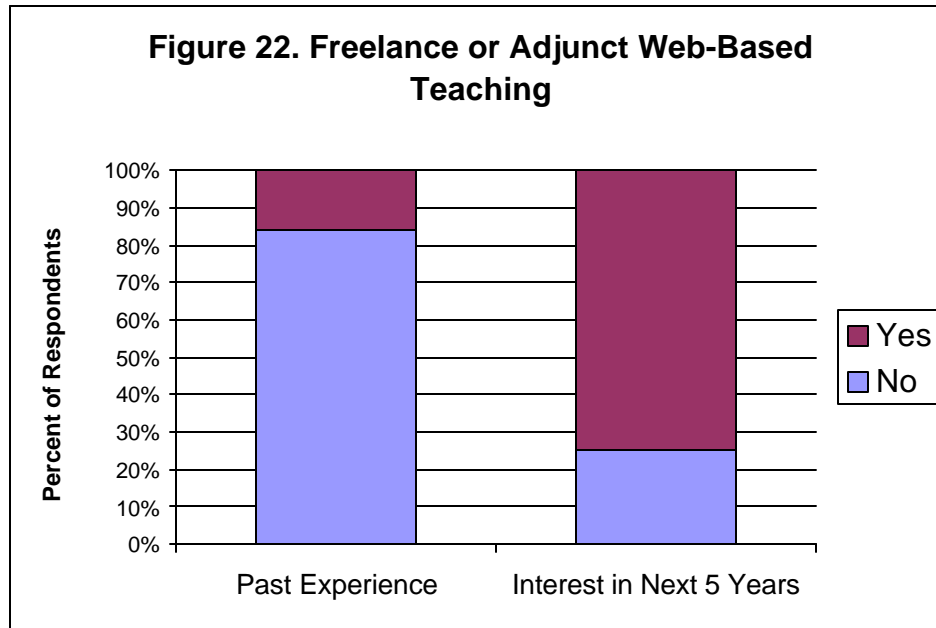
3.6 Institutional Motives and Decision Making

Primary Institutional Motives for Online Education. As Ron Owston (1997) pointed out, during the past few years, perhaps nothing has captivated and excited the minds of administrators and educators more than the notion of teaching courses on the World Wide Web. He then argued "Before we introduce any new technology into our classrooms we must be able to justify its contribution" (p. 33). The three key areas wherein Owston suggested that Web-based learning might be evaluated were improved access to education, student learning, and cost efficiency. While he detailed many improvements to educational access as a result of online technologies, documenting learning outcomes and costs proved much more difficult.[3]

In order to establish the level of college instructor agreement with Owston's key areas, our study participants were asked whether profit, improved learning, or access to education were among the primary motives behind the development of online education across institutions of higher education (see Figure 23). They could select all three. As Owston had documented, there appears to be more support among these early Web adopters for the use of Internet technology to increase access to education than for improving profit or learning. Of our respondents, 93 percent agreed that access was a primary motive for developing online education. Only one person strongly disagreed with that statement. Additionally, 61 percent agreed that improved learning was a primary motive. In contrast, only 41 percent felt that profit was a primary motive. Hence, those in the Web-based learning trenches put the emphasis on access and learning over profits.

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[3] For a model to calculate online learning course costs, see Morgan (2000) at
http://webpages.marshall.edu/~morgan16/onlinecosts/.

Figure 23. Primary Insitutional Motives for Developing Online Education

When asked the same questions about their own institutions, these general patterns hold. However, these instructors were slightly less likely to agree that each of the three motives were applicable to their particular institution; only 29 percent agreed or strongly agreed that profit was a motive while 53 percent agreed that learning was a motive and 81 percent felt that their own institution was concerned about access. The reasons for the lower agreement levels were unclear.

Reasons for Institutional Investment. These early Web adopters were asked to rate the level of importance of five key reasons why colleges and universities, in general, might be interested in investing in Web-based teaching and learning (see Figure 24). Access to an external universe of libraries, information resources, and databases was the most important reason cited by respondents to explain university investment in Web-based teaching and learning. The second most important reason, according to these faculty members, was to support improved efficiency and effectiveness in teaching and research. Offering distance education to a potentially unlimited audience was rated third, while fostering closer inter-institutional cooperation, consortia relationships, and resource sharing within the higher education community was rated fourth. Finally, some respondents felt that building partnerships with private businesses and the government was a critical reason for investing in Web-based teaching and learning.

Figure 24. Reasons for Institutional Investment in Web-Based Teaching and Learning
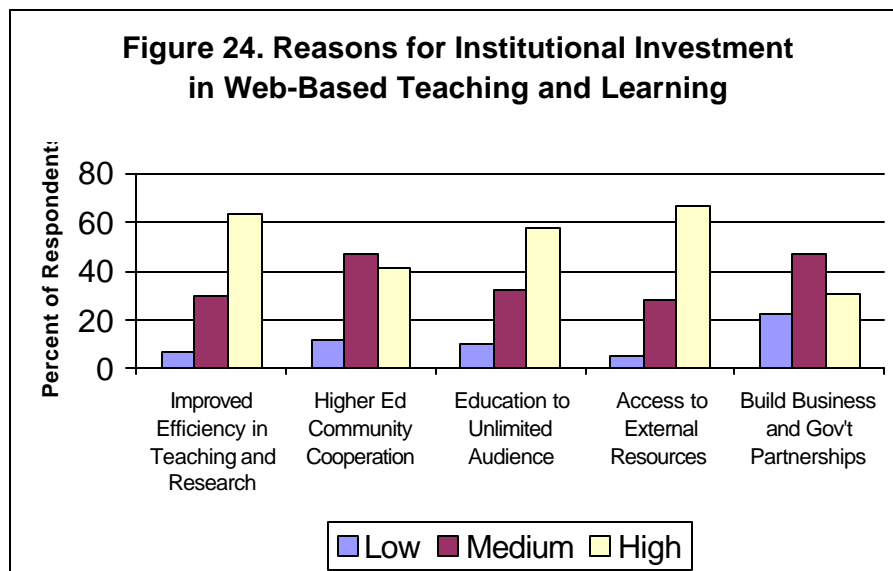

Fewer than 10 percent of the respondents offered additional reasons why higher education institutions should invest in Web-based teaching and learning. Most of these reasons concerned student recruitment, student access to education, student skill development, contributing to the economy of the state, revenue enhancement, and staying up to date. Quotes from some respondents included, "to offer equal opportunity of high quality education to students in more rural areas," "we are under a mandate to increase the number of students we serve. We cannot do it on campus, so we are trying distance learning…," "to recruit and retain tech-savvy students," "It's a new revenue source, that's #1," and "because Web-based activities are becoming ubiquitous in ALL workplaces." One person simply stated, "Students will demand Web-based courses or go somewhere else."

Web-Based Teaching Technology Decision-Makers: We also asked about the organizational level in which decisions regarding Web-based teaching, including system purchases and policies, were made. While respondents could select more than one category, Figure 25 indicates that the people most likely responsible for making such decisions were university administrators (63 percent of the respondents identified them). Surprisingly, faculty governance also appears to play a key role in these institutions as 40 percent of our respondents indicated that technology decisions regarding Web-based teaching were made at the faculty level. Similarly, 39 percent indicated that it was a departmental responsibility or decision. There were other key players here. For instance, 36 percent of respondents thought that the technology support unit on campus made these decisions, while 27 percent considered it a function of the Chief Technology Officer (CTO). Twenty-two percent selected the teaching and learning center director level as responsible for these decisions. Four percent listed others as responsible including the office of distance education, grant administrator, board of regents, or college provost. Finally, only 5 percent did not know who made these decisions.

Figure 25. Organizational Level of Instructional Technology Decisions Related to Web-Based Teaching
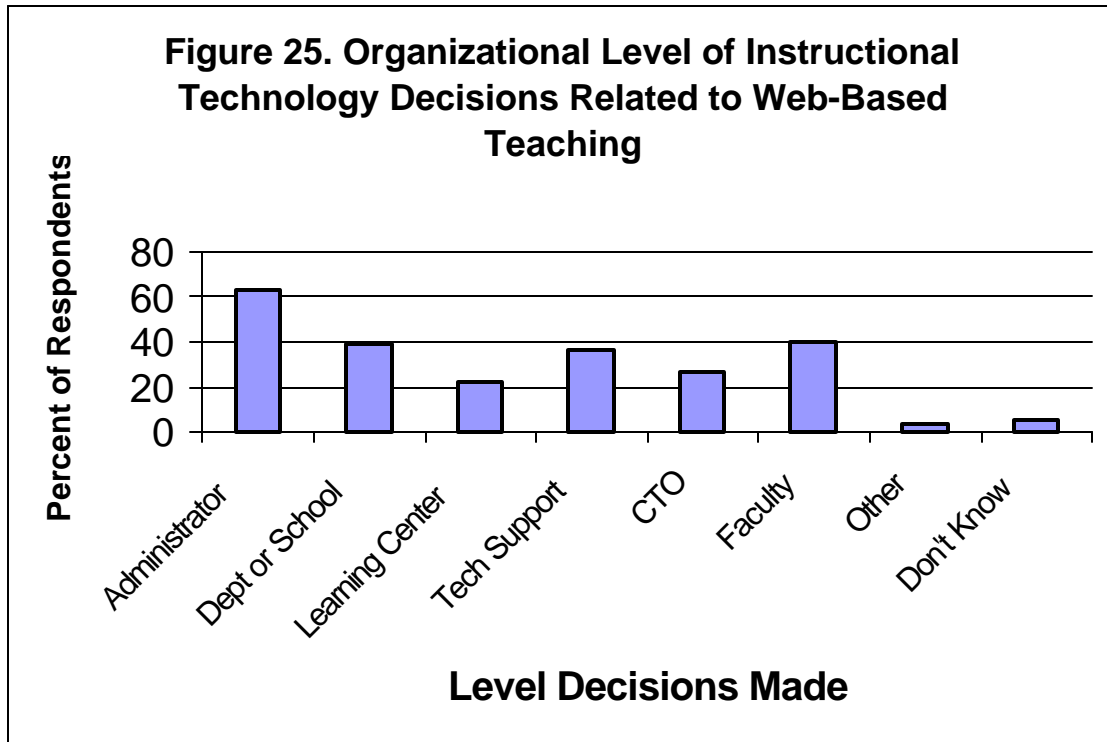
There were no statistically significant differences in instructional technology decisions across size and type of institution. However, as indicated in Figure 26, there were some interesting trends. For instance, in institutions with fewer than 3,000 students, faculty-level decisions are made regarding courseware slightly over 50 percent of the time, whereas this drops to 32 percent in medium sized institutions and 41 percent in large institutions. In comparisons of public and private institutions, we found that college instructors have a role in instructional technology decisions in nearly half of the 45 private institutions, whereas in this survey just 34 percent of the faculty members in the 151 public institutions in this study helped formulate such decisions. Besides asking for faculty input, smaller institutions also seem to rely on campus technology support units and the chief technology officer slightly more often than medium and large institutions. Larger institutions have a slight preference for learning center and departmental-level decisions compared to smaller institutions. Still, most institutions appear to rely on high-level administrators to make the technology decisions that impact Web-based teaching and learning.

Figure 26. Organizational Level of Instructional Technology Decisions Related to Web-Based Teaching by Size of Institution
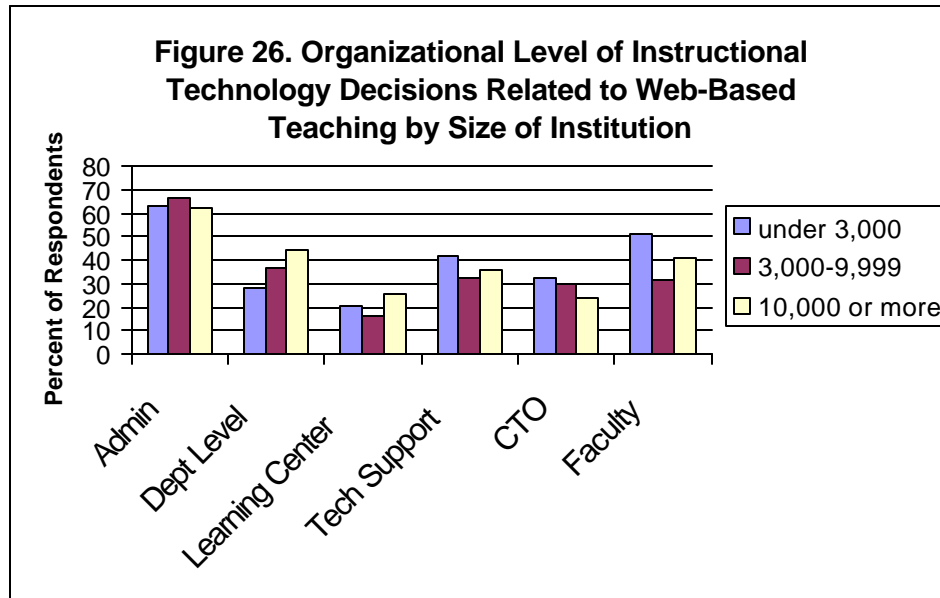
Next, we looked at differences in the organizational level at which instructional technology decisions are made between institutions with fewer than 10,000 students and those with 10,000 or more students. At the larger institutions, the department or school is more involved in these instructional technology decisions (44 percent) than in smaller institutions (33 percent). Teaching and learning center directors are also more involved in making these decisions in the larger colleges and universities (26 percent) than in smaller ones (18 percent). This is not unexpected since larger institutions are more likely to have campus teaching and learning centers. Administrators are involved in Web-based teaching technology decisions at roughly the same rate (62-65%) at both types of institutions. None of these comparisons were statistically significant, however.

Figure 27 reveals that differences in the organizational level of technology decisions between public and private were minimal. Public institutions more often involved teaching and learning center directors in their decision-making about the use and support of instructional technology than private institutions (the differences here approached significance), whereas private institutions more often involved faculty members in these decisions than public institutions. Administrative-level decisions were made at over 60 percent of both public and private institutions. Once again, none of these differences were statistically significant.

Figure 27. Organizational Level of Instructional Technology Decisions Related to Web-Based Teaching By Type of Institution
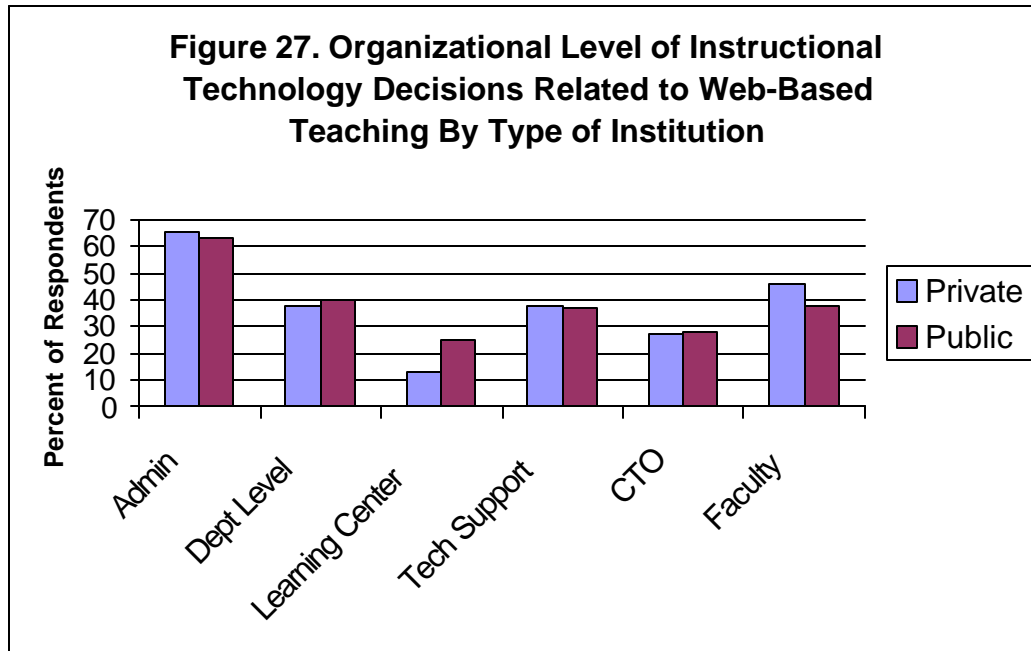
## 3.7 Usefulness of Web-Based Tools for Teaching and Learning

Usefulness of Web-Based Tools for Teaching and Learning
We were also interested in the attitudes of these college instructors about Web-based instructional tools, resources, and activities. As a result, the respondents were asked to rate the degree of usefulness for items in the following categories:

  (1) Online Class Tools (e.g., tools for syllabus posting, online lecture notes, online databases, self-testing, quizzes, cases, questions or problems related to classroom material, uploading and downloading file tools, online student evaluations, and courseware).

  (2) Collaboration and Sharing Tools (e.g., tools for sharing success stories, instructor collaboration, discussion forums, real-time chats, interactive feedback and annotation, student or instructor profiles, guestbooks, test making collaboration, and online task or activity collaboration).

  (3) Instructional Activities (e.g., online scientific simulations, data analysis, lab activities, performance activities, and critical and creative thinking activities).

  (4) Web Resources (e.g., search engines, online glossaries, Web link tools, articles and journal links, book recommendations, newsgroups, colleague Web sites including syllabi and lecture notes, and discipline specific teaching and learning resources).

After rating each item as low, medium, or high usefulness for online teaching and learning, the instructors were also asked whether they in fact used that item in their courses.

Useful Online Class Tools. In general, these college educators perceived high utility for most of the online class tools considered in this section of the survey (see Figure 28). Perhaps more importantly, at least one-third of the respondents actually used each of the items in this category. Not surprisingly, respondents tended to rate the tools that they actually used as more useful.

Figure 28. Class Tools for Teaching Online
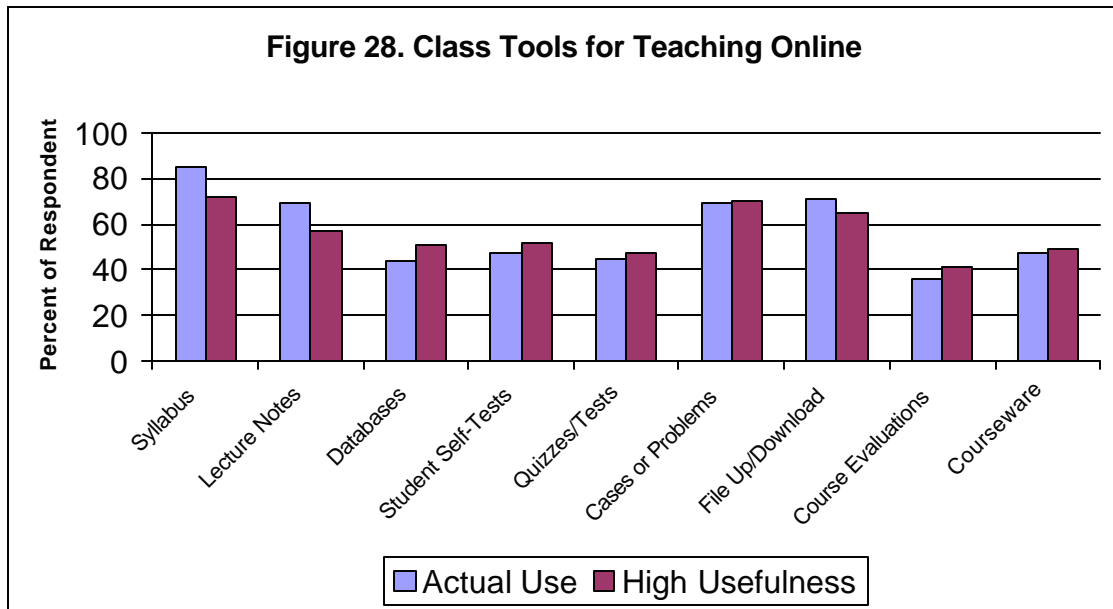
The highest rated tool was for posting syllabi online. Not only did 72 percent of the faculty respondents report this feature as highly useful, 85 percent actually used such a tool in their courses. These findings also match the Web-based Education Commission (2000) report, which documented the increased posting of course syllabi to the Web and incorporation of Web resources within college instructor syllabi. Of course, many of our survey respondents were selected for this survey because they had already posted their syllabus online. The fact that more use this type of tool than rate it as highly useful indicates it is relatively easy to do.

The large number of respondents using tools to post their syllabi online reveals an initial area of penetration for the Web in college teaching and learning. For example, the University of Michigan School of Information has compiled a list of faculty course syllabi and placed it online (http://intel.si.umich.edu/cfdocs/si/courses/home/splash.cfm). Similarly, the UCLA Humanities Department created the E-Campus (http://ecampus.humnet.ucla.edu/) for syllabi, assignment announcements, and other course related links. However, as indicated earlier, the most complete listing of college syllabi to date is located at the World Lecture Hall (http://www.utexas.edu/world/lecture/). This site hosts syllabi across disciplines for college instructors worldwide.

Figure 28 also reveals that a tool for posting cases, questions, or problems corresponding to course material on the Web was the next most valuable courseware feature of these early Web adopters. Not only did 70 percent rate this survey item as highly useful, but nearly 70 percent also had engaged in such online activities. In fact, only 4 percent rated this item as low in perceived usefulness.

These college instructors also valued file uploading and downloading tools. Sixty-five percent of the respondents felt they were highly useful, and 71 percent had used such tools in their teaching.

The next highest rated item in terms of usefulness was an online lecture notes utility, which was rated as highly useful by 57 percent of the respondents and actually used by 69 percent of them. Once again, this indicates that while faculty members might view different tools as more useful, they generally rely on readily accessible tools that perform a useful function. Such findings also signify that online tools for posting lecture notes, cases, and syllabi are among the first wave of Web-based instruction courseware. In contrast, online databases received high ratings for usefulness from 51 percent of the respondents but only 44 percent were using such a tool. Perhaps such tools are not yet available to the degree that college instructors would like.

Once a course is on the Web, there must be some student evaluation and assessment. Indeed, some scholars advocate the use of the Web for online testing and evaluation as a means for reducing costs and increasing speed (Kronholm, Wisher, Curnow, & Poker, 1999). In addition to quick and cost effective feedback, online evaluations provide more organized, individualized, and plentiful course feedback (Hmieleski & Champagne, 2000). Despite these benefits, Hmieleski and Champagne (2000) report that 98 percent of the most wired schools still use pen and paper course evaluations. Among the early Web-adopting faculty members of this study, however, 52 percent rated student online evaluation tools as highly useful and 48 percent were actually using such tools. Online quizzes or tests were deemed highly useful by 47 percent of respondents and nearly the same percent were actually using online exams in their teaching. One in five respondents gave a low usefulness rating to such tools, however. Receiving even lower support was online student evaluations of course materials. Only 41 percent rated these as highly useful, while just 36 percent used such tools.

Most of the above findings are consistent with the research from Peffers and Bloom (1999) which found that online instructors tend to rely on common software such as e-mail, file uploading and downloading, and asynchronous conferencing as well as simple tools for posting static or dynamic syllabi, Web links to course material, and lecture notes. According to their study, significantly fewer instructors used chatrooms, multimedia lectures, online examinations, animation, and video streaming. However, this research also revealed that the instructional impact of Internet media tools in college settings is expected to dramatically increase in the next few years.

Firdyiwek's (1999) review of courseware tools indicates that few such tools support pedagogy in an integrated fashion. As tool development proliferates, so, too, does

resulting confusion about how to effectively use these online tools. Interestingly, in this study, only 49 percent of respondents were highly supportive of tools to place their entire courses on the Web and 47 percent were using such tools. Could such modest numbers among early Web adopters be due to the lack of pedagogical support in these tools? Or does it reflect a lack of time or training? Perhaps these early Web adopters simply do not want to give up traditional instruction. Or perhaps they rely on customized courseware tools. Whatever the answer, this seems a ripe area for additional research.

Useful Collaboration and Sharing Tools. There are decades of research studies detailing the clear advantages of cooperative and collaborative learning over more individual and competitive formats (Johnson & Johnson, 1975; Slavin, 1991). Fortunately, many collaborative pedagogical strategies have relevance in Web-based instruction (Bonk & Reynolds, 1997). In fact, a proliferation of collaborative learning technologies have recently emerged for both work and educational environments (Bonk & King, 1998; Bonk & Wisher, 2000). In higher education, technologies are becoming more interactive and distributed, enabling learners and instructors to participate in an incredible array of information, resources, and instructional experiences (Bonk & Cunningham, 1998). The blending of technological and pedagogical advancements presents new opportunities for both research and teaching focused on online dialogue, information sharing, and facilitating learning. In part, such collaborative tools have come on the scene to meet the needs of an older and more diverse student population than in the past (Oblinger & Maruyama, 1996). Perhaps this survey will help educators design more powerful e-learning environments for Web-based collaboration and sharing.

Collaborative Web-based learning tools offer unique ways for learners, instructors, and experts to interact (Cummings et al., 2000). There are now Web tools for student collaborative inquiry, problem-based learning, articulation and dialogue, debate, and personal reflection (Bonk & King, 1998; Oliver & McLoughlin, 1999; Oliver, Omari, & Herrington, 1998). Some research indicates that effective use of these new tools can actually foster communities of practice (Barab & Duffy, 2000). To create a learning community, the tool or system must bring people together for some initial common interest or quest (e.g., sharing, problem solving, collaborating, learning, etc.). There not only is a need for a common reference point or issue for the online group, but members also need multiple ways to become informed about events of that community (Duffy, McMullen, Barab, & Keating, 1998).

Sharing information online often involves conferencing and computer-supported collaborative learning tools. Fortunately, such tools have begun to infiltrate online learning courseware (Bonk & Dennen, 1999). In addition, communities such as the World Lecture Hall, MERLOT, and CourseShare.com are now available for visitors to locate and share learning materials within specific discipline or interest areas. But what were the views about such resources and tools among the respondents to this particular survey who already had been involved in online information and resource sharing? Surely, they would understand and promote collaboration and sharing tools more than the rest of the population.

As research from Peffers and Bloom (1999) predicts, the respondents to this survey perceived less utility for collaborative and online sharing tools than for test, lecture note, and syllabus tools mentioned earlier. For instance, when asked about the utility of tools to share success or failure stories with other instructors, only 27 percent had done so and only 30 percent listed this as a highly useful item (see Figure 29). Another 51 percent, however, rated the degree of usefulness as medium. Hence, more than 80 percent would find some use for such tools; perhaps they simply are not yet available.

Similarly, only 26 percent used online tools to collaborate and form partnerships with other instructors (they must not be counting their online participation in the WLH or MERLOT). Still, 40 percent saw this as a highly useful idea. Another 44 percent saw it as of medium utility. Slightly more college instructors (31 percent) used Web-based tools in their courses for students to share success or failure stories with other students. Forty-one percent listed this as highly useful and another 45 percent felt that it was of medium utility. Slightly higher, 46 percent of the respondents used tools for students to collaborate and form partnerships with other students. In fact, 56 percent felt that this was a highly useful endeavor and another 34 percent found it of medium usefulness. The fact that 90 percent perceived value in student online collaboration is of significance.

Asynchronous (i.e., delayed communication) discussion forums, synchronous (i.e., real-time) chats, and annotation or feedback tools are common means for electronic collaboration. Sixty-one percent of faculty members in this study utilized bulletin board or asynchronous types of discussion in their courses. While 60 percent rated this type of tool as highly useful, another 31 percent saw it as having medium utility. There was a significant drop in perceived utility and actual use in terms of synchronous collaborative environments compared to asynchronous environments. Only 32 percent of the instructors in this survey had used real-time chats, and only 37 percent rated this item highly. In fact, 28 percent of the respondents rated this item low in utility. In contrast, tools for interactive feedback, commenting, and annotations fared much better in terms of usefulness among these respondents. Forty-six percent of the faculty respondents had used interactive feedback or annotation tools in their classes. Even more, 56 percent perceived them as highly useful, while only 6 percent rated this type of collaborative tool as low in utility. Perhaps software developers might want to target annotation and feedback tools; they are highly valued and yet not everyone is using them.

Figure 29. Collaborative Tools for Teaching Online
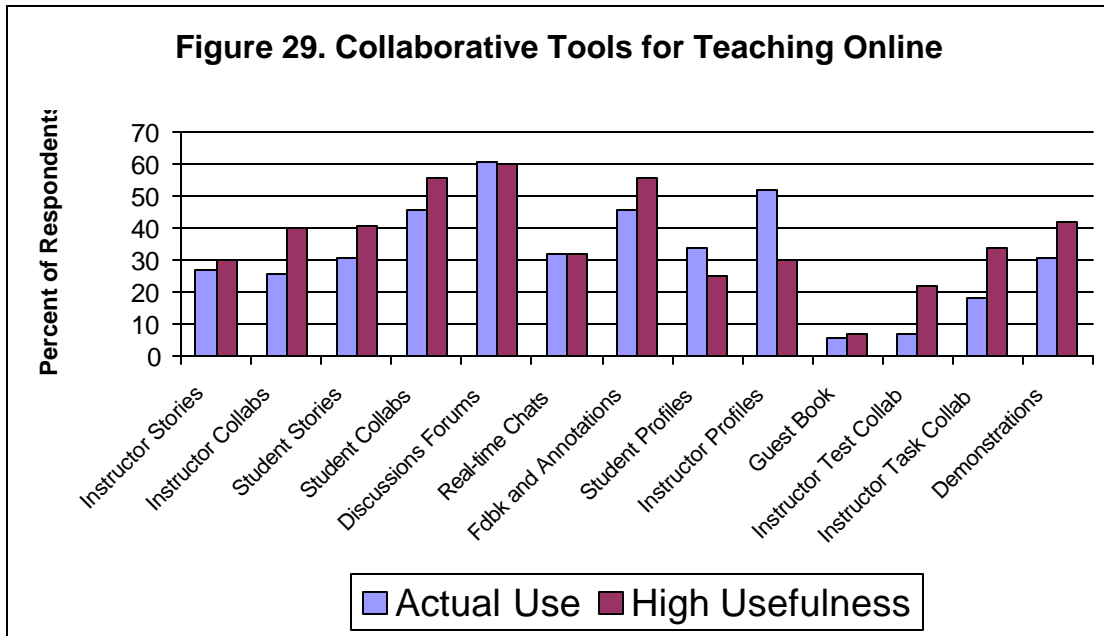
Personal profile tools are another means to share information online with peers and other instructors. Whereas 52 percent claimed to use instructor profile tools in their courses, only 34 percent utilized student profile tools. Such a finding seems odd. Perhaps there was misinterpretation on this item or perhaps it is easier to reflect on tools one is personally using. Only 30 percent considered instructor profiles important, indicating that they are using such a tool simply because it is there and it is easy to use. Even less, just 25 percent, found student profile tools useful. In fact, 35 percent rated the degree of usefulness of student profile tools as low. Online guestbooks were even less appealing. Only 6 percent used them and just 7 percent rated them highly. In fact, 66 percent of the respondents—the largest of any item—rated this type of tool as low in usefulness.

Related to our findings about online evaluation and testing, only 7 percent used the Internet for collaborating with other instructors for test-making. Still 22 percent rated this as a highly useful item, while another 40 percent felt it was of medium utility. Similarly, few instructors collaborated with other instructors on class tasks, activities, and discussion. Only 18 percent had engaged in such collegial activities, while 34 percent rated this as highly useful and another 41 percent consider it of medium utility. Perhaps these are two immediate areas wherein universities and software development companies might partner together to develop and test new Web-based teaching and learning tools.

Finally, online technology demonstrations received fairly favorable reactions from our respondents. Thirty-one percent of the faculty members had used this type of tool in their classes. In addition, 42 percent rated this item as highly usable in their classes, while 38 percent rated it of medium utility.

Despite these findings, college instructors perceived a need for more collaborative tools. Tools with more than a 10 percent gap between actual use and perceived high utility

included tools for instructors to form collaborations with other instructors, tools for students to share stories with other students, tools for interactive feedback and annotations on student work, tools for instructor test-making collaboration, tools for instructor task collaboration, and tools for online technology demonstrations. These large gaps between teaching practice and perceived utility indicate a need for more collaborative tools in e-learning environments. They may also point to the current direction of Web-based teaching and learning practices.

Useful Online Instructional Activities. Instructional activities that these instructors found useful were also of interest in this study. The first four online activities asked about were (1) scientific simulations; (2) data analysis; (3) lab activities; and (4) performance activities. Examples of the latter activities might include band or music tasks as well as online decision making in any discipline including counseling, finance, or teaching.

As displayed in Figure 30, these four activities were all infrequently used by the survey respondents. The actual use of these tools ranged from 23 to 26 percent, with lab and performance being used slightly more often than scientific simulations and data analysis. All of these types of activities were deemed highly useful by approximately 45 percent of the respondents. Such figures are interesting since the percentage of respondents who rated these items as highly useful was nearly double the percentage of who actually used them. When combining those who rated activities moderately or highly useful, more than 75 percent of the respondents indicated utility for each of the four tools. Such data clearly indicate that there is a market for such tools, but college faculty members currently do not have access to them.

Figure 30. Online Instructional Activities
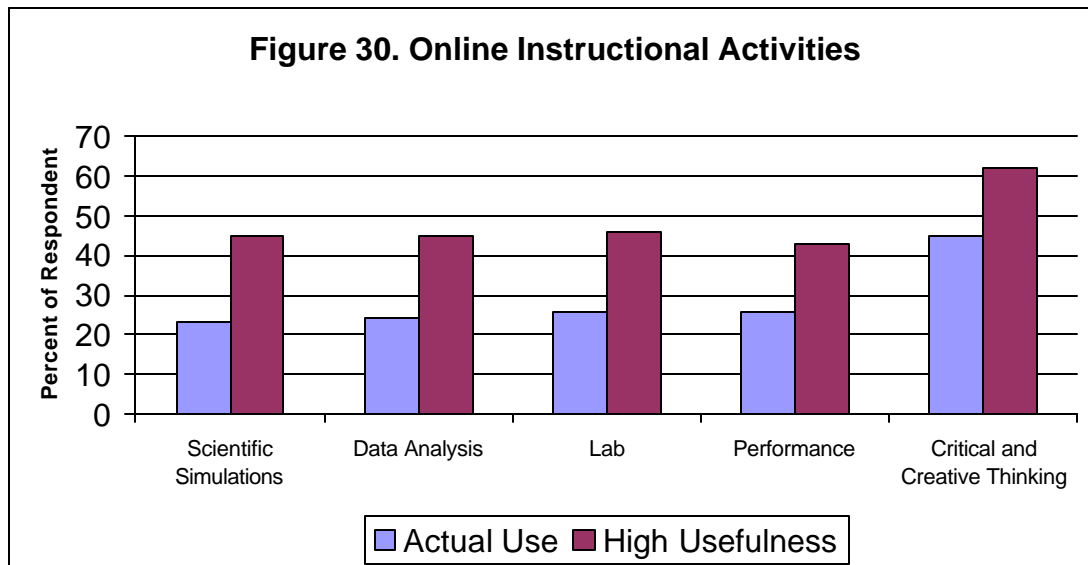
A fifth and final instructional activity was online critical and creative thinking activities (interactive and collaborative). This item was rated more favorably than the other four. Forty-five percent of these faculty members used such activities in their online teaching, and even more impressively, 62 percent rated them as highly useful for their teaching

discipline. An additional 28 percent rated them of medium usefulness. Only 10 percent considered their degree of usefulness low. Such results are further indication of the need for better pedagogical tools in online learning environments.

Useful Web Resources. The Web is highly touted as an online resource. Some suggest that it is a gigantic library sprawling in front of students and instructors alike (Malikowski, 1997). But in what ways do early Web adopters actually view it as a resource for teaching? Questions were asked about the utility of such Web resources as search engines, glossaries with links to examples, Web link suggestions, article and journal links, book recommendations, newsgroups, collegial Web sites, and general and discipline-specific online resources.

Given that research has revealed that college instructors tend to rely on easy to use tools, it is not surprising that search engines were the most commonly used Web resource with 83 percent of these faculty members utilizing search engines in their teaching (see Figure 31). Equally impressive, 70 percent ranked search engines such as Yahoo or Lycos as highly useful and only 6 percent ranked them low. The next most favorable ranking was for online article and journal links. Seventy-four percent of the respondents used such tools and 70 percent rated them as highly usable. Only 3 percent rated this item low.

Sixty-one percent of these college educators used discipline specific resources in their teaching and 63 percent found them highly useful. Along these same lines, 59 percent had used Web sites created by colleagues in their teaching. Such collegial Web site use included syllabi and lecture notes. This is not surprising given where the sample was derived. In fact, only 8 percent rated the utility of this item as low. Similarly, 58 percent had used general teaching and learning resources or instructional strategies that had been posted online. Once again, only 8 percent viewed this item as low in utility.

Online glossaries are another emerging Web-based teaching resource. In fact, 57 percent of the survey respondents had used online glossaries with links to examples on the Web in their teaching. Similarly, 55 percent viewed this Web resource as highly usable, while another 35 percent gave it a medium rating.

In effect, the use of online glossaries, colleague Web sites, and general as well as discipline-specific online teaching and learning resources indicates that the Internet has spawned a new type of teaching—one that is reliant on the Web for a significant part of college instruction. Online teaching in an online world is different, and new faculty, as well as experienced ones, need to be prepared for it.

The three lowest rated areas, which were the only items used by less than 50 percent of the respondents, were student Web link suggestions, online book reviews, and newsgroups. Slightly under half of the faculty members in this survey (i.e., 48 percent) had used tools where students made Web link suggestions. Still, 45 percent of the survey participants viewed this item as having high utility, while another 42 percent rated it as medium in degree of usefulness. Book recommendations received roughly the same ratings; 47 percent had used such a tool and 44 percent deemed it as highly useful. In

contrast, newsgroups were used by only 18 percent of these faculty members, while just 17 percent rated them as highly useful.

Figure 31. Web Resources for Teaching Online
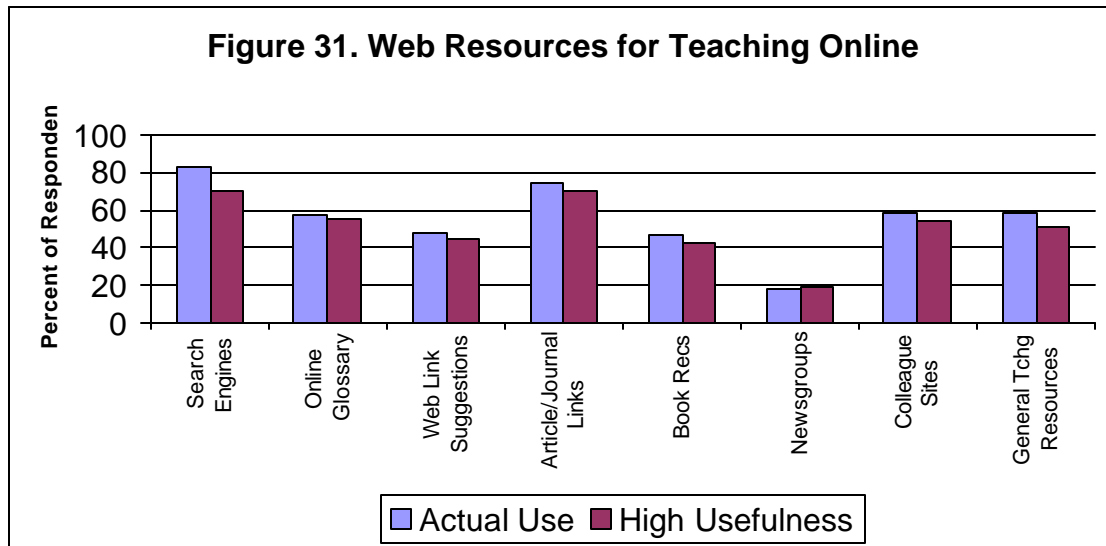
Our findings suggest a relatively high and diverse use of Web resources in teaching. Web resources are highly valued by college educators since they can augment lecture notes with visual depictions of concepts, replace the need for textbooks with online articles and glossaries, and provide more current research and professional news. Tools to search, share, and evaluate online course materials are vital parts of one's Web-based teaching arsenal. When asked to share URLs of Web resources they found particularly useful in their teaching, 15 percent of these college instructors responded with extremely diverse suggestions. For instance, they listed course-sharing Web sites such as MERLOT, professional organization sites such as the American Psychological Association, textbook publisher Web sites, locations for instructional design models, and university teaching and learning center resource listings. Only MERLOT was listed more than once.

The findings above denote many areas wherein improvements in online teaching and learning could occur. The numbers reveal that tools for collaboration and resource sharing are highly valued by college faculty members but are not yet part of their typical online teaching life. Tools for annotation and feedback, article or journal linking, and online discussion were considered highly valuable. Additionally, activities for student labs, simulations, and critical and creative thinking have not been as prevalent as college faculty desire. Nevertheless, the number of tools and activities that were of substantial use already, as well as the high usefulness ratings that many additional tools received, was striking. Such ratings are signs that online teaching and learning is not going away in higher education settings, but, instead, is about to be enhanced, extended, and perhaps even transformed (Bonk, Daytner, et al., in press).

3.8 Obstacles and Support Mechanisms

Obstacles to Web-Based Teaching. There certainly are a myriad of obstacles to utilizing the Web in higher education instruction. Issues of time, training, experience, ownership, costs, confidence, technological infrastructure, administrative support, and interest are often mentioned. In this study, the main obstacle to effective use of the Web was time; more specifically, the amount of preparation time required for Web-based course development and delivery (see Figure 32). Sixty percent of the college instructors in this survey reported that preparation time was a major issue.

What other obstacles did our respondents face? Contrary to findings from the NEA study, nearly 4 in 10 found the lack of technical support to be a major deterrent. Slightly fewer, 37 percent, indicated that a lack of time to learn to use the Web was an obstacle. Along these same lines, a quarter of the respondents lacked training on how to use the Web. And even if they did receive proper training or time allocation, nearly 30 percent felt that they lacked the equipment or software to display the Web in the classroom. Of course, such findings contrast with what was reported earlier about fairly abundant technology access. Perhaps it indicates that technology is available in their buildings for utilizing the Web in instruction, but it is not yet found in their particular classroom settings.

What were not viewed as major obstacles? Fewer than 20 percent of the faculty respondents cited lack of hardware or outdated equipment in their office as a barrier. Even fewer, 15 percent, indicated that the lack of software or outdated software was a problem. And amazingly, fewer than 2 percent had no interest in using the Web in their teaching. Keep in mind, once again, that the respondents were generally early Web-based teaching adopters who would be expected to be interested in using the Web in their instruction. Still, the nearly unanimous interest in using the Web indicates that this is a technology with the potential for transforming higher education.

Figure 32. Major Obstacles to Use of the Web in Teaching
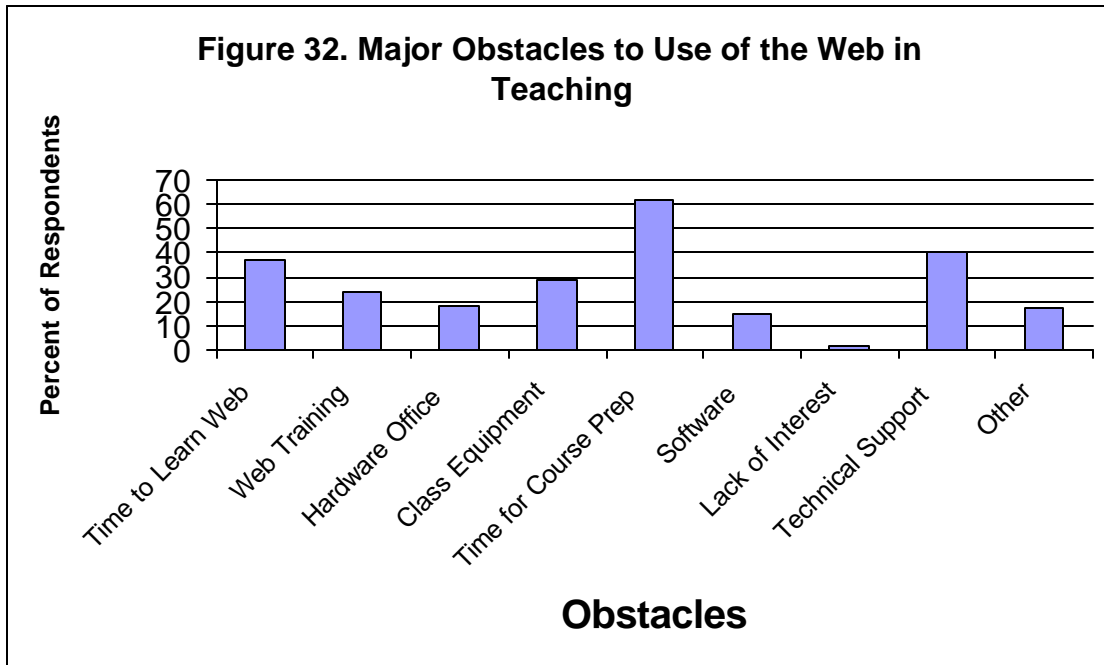
Around 17 percent of the respondents remarked on other problems holding up their adoption of the Web in their teaching. In open-ended responses, these early Web adopters focused on issues of administrative support, time, student interest, pedagogy, vision, funding, incentives, utility, reliability, motivation, and bandwidth.

Administrative support comments included:
- ➢ "Lack of administrative vision."
- ➢ "Lack of incentive from administration and the fact that they do not understand the time needed."
- ➢ "Lack of system support."
- ➢ "Little recognition that this is valuable."
- ➢ "Rapacious U intellectual property policy."
- ➢ "Unclear university policies concerning intellectual property."

Pedagogical comments included:
- ➢ "Difficulty in performing laboratory experiments online."
- ➢ "Impossible to teach drawing and lithography."
- ➢ "Lack of appropriate models for pedagogy in content-based instruction."

Time-related comments included:
- ➢ "Lack of incentive (so much time and energy)."
- ➢ "More ideas than time to implement."
- ➢ "Not enough time to correct online assignments."
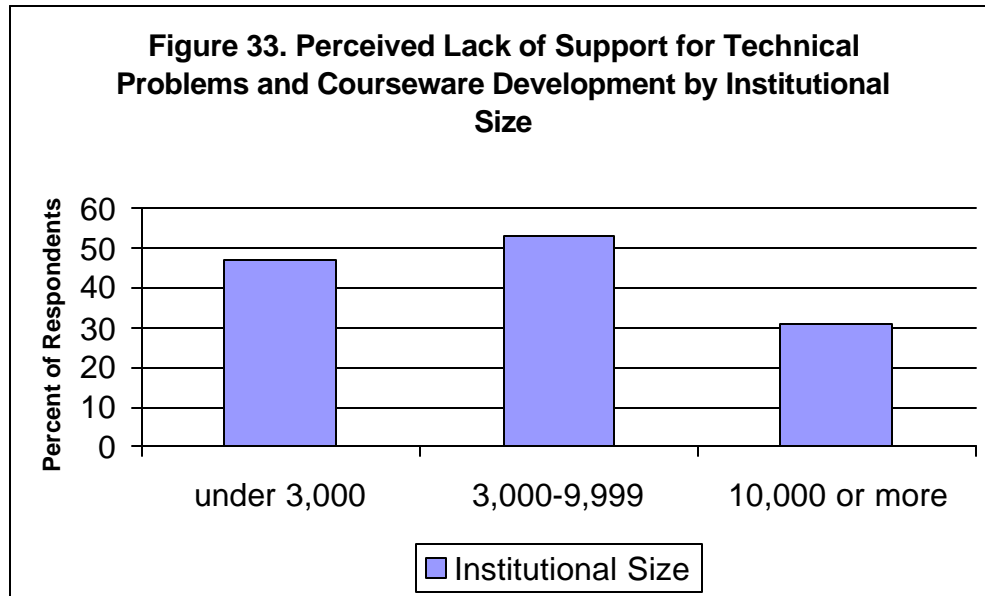- ➢ "People need sleep; Web spins forever."
- ➢ "Time to grade/interact."

Cost also appears to be an issue as the following comment notes, "Institution supports (XYZ platform) because it is the cheapest…is too hard for students and faculty to learn."

The following comment from one respondent summarizes many of these issues:

"…(the) lack of time to develop materials and add to what is already developed. Little recognition that this is valuable and thus hurts promotion and tenure decisions which seem to be primarily based on publications in juried journals not on stuff on the Web."

When comparing obstacles encountered at private and public institutions, two important differences emerged, (1) the perceived lack of time to learn to use the Web and (2) other obstacles faced by faculty at private institutions. First, faculty members from public institutions were significantly more likely to indicate that time to learn to use the Web was a problem (40 percent) than those from private institutions (20 percent). It is unclear, however, whether this is due to differing teaching and research expectations, support structures, or Web-based learning initiatives at their institutions. Second, 30 percent of the faculty respondents from private universities noted that they faced other obstacles not listed (e.g., lack of administrative support) as compared to just 14 percent of respondents from public institutions. On several other items, faculty members from public institutions were more likely to indicate problems than those from private ones. For instance, faculty respondents from public institutions were slightly more likely to complain that Web-based learning required too much preparation time (64 percent versus 58 percent) and that they lacked the proper equipment to display the Web in their classrooms (30 percent versus 23 percent).

An interesting finding emerged when comparing differences in the number and type of obstacles by the size of the institution (see Figure 33). While faculty respondents from smaller institutions perceived a lack of Web training, computer hardware, and technology support compared to those from larger institutions, only the perceived lack of support for technical problems and courseware development was significantly different. More specifically, 47 percent of those from institutions under 3,000 students viewed this as a problem, 53 percent of those from institutions between 3,000 and 9,999 noted it as a major obstacle, and only 31 percent from institutions over 10,000 indicated that this was an obstacle. When combining the responses for those in institutions under 10,000 students, the differences remained significant with 51 percent of those in the smaller institutions indicating a need for such technical and courseware support versus only 31 percent in larger institutions. There were also some modest indications that the lack of Web training and inadequate technology in the classroom and office were also obstacles in the smaller colleges and universities.

Figure 33. Perceived Lack of Support for Technical Problems and Courseware Development by Institutional Size

We also explored obstacles to Web-based teaching as reported by gender. The only item that approached a significant difference here was a lack of software or outdated software that was noted by 19 percent of the males compared to only 9 percent of the females. However, females pointed to such obstacles as time to learn to use the Web (43 percent versus 32 percent for the males), lack of classroom equipment to display the Web (32 percent versus 26 for the males), too much preparation time (67 percent versus 60 percent for the males), and a lack of technical and courseware development support (47 percent versus 36 percent for the males). Apparently, there are more perceived barriers for female instructors in college settings than for males. While male instructors might recognize outdated software tools, females seem to be seeking additional training and support.

Overall, time for course preparation and delivery as well as technical and administrative support are among the major obstacles for college instructors attempting to teach online. Equipment and software tools are less significant factors. All findings vary, however, by type and size of institution.

Support for Web-Based Teaching and Research. The survey also addressed the type of support required by college educators to utilize the Web in their teaching, research, and administrative duties (see Figure 34). Given the previous answers regarding online teaching obstacles, it was not surprising that release time was the most popular form of support selected here (70 percent). In addition, each of the following three forms of support were desired by nearly 7 in 10 respondents: (1) recognition for use of the Web in tenure, promotion, and salary review decisions; (2) technical support staff to assist with online course development and associated technical problems; and (3) instructional development grants or stipends. Given the lack of differentiation in responses, universities may want to embed aspects of a few of these key support preferences in their distance education policies and initiatives. For instance, they might offer options

between release time, instructional development grants and stipends, additional salary, and designated technical support. They might also adopt policies and practices wherein online teaching and research activities would be more fully recognized in college professor tenure and promotion cases.

Nearly 60 percent of respondents felt that it would be valuable for instructional designers to assist faculty members when needed. The same percent asked for time to learn about and utilize the Web. In addition, 45 percent thought that additional training on how to use the Web in teaching would be beneficial. Around thirty percent of these faculty respondents suggested that greater student access to computers as well as online resources would also be helpful, while slightly over one fourth of them considered e-mail notification of technology changes or updates to be valuable. In contrast, a mere 13 percent thought that chat room help for Web-related problems was a support they needed for effectively using the Web in teaching, research, or administrative duties.

A few respondents suggested additional ideas for online teaching support. Among the advice was for "better equipped classrooms for demos," "really specific examples of 'good courses' so we have some idea what we are trying to achieve," "more money," and "assistance with routine office tasks, grading objective tests, etc., to free up my time to create Web lectures and other course materials." Others argued for outcome data and useful learning research, clearer royalty definitions, and administrators who believed in the priorities of student learning and could articulate the importance of Web teaching.

Figure 34. Supports Needed To Use the Web in Teaching, Research, and Administration
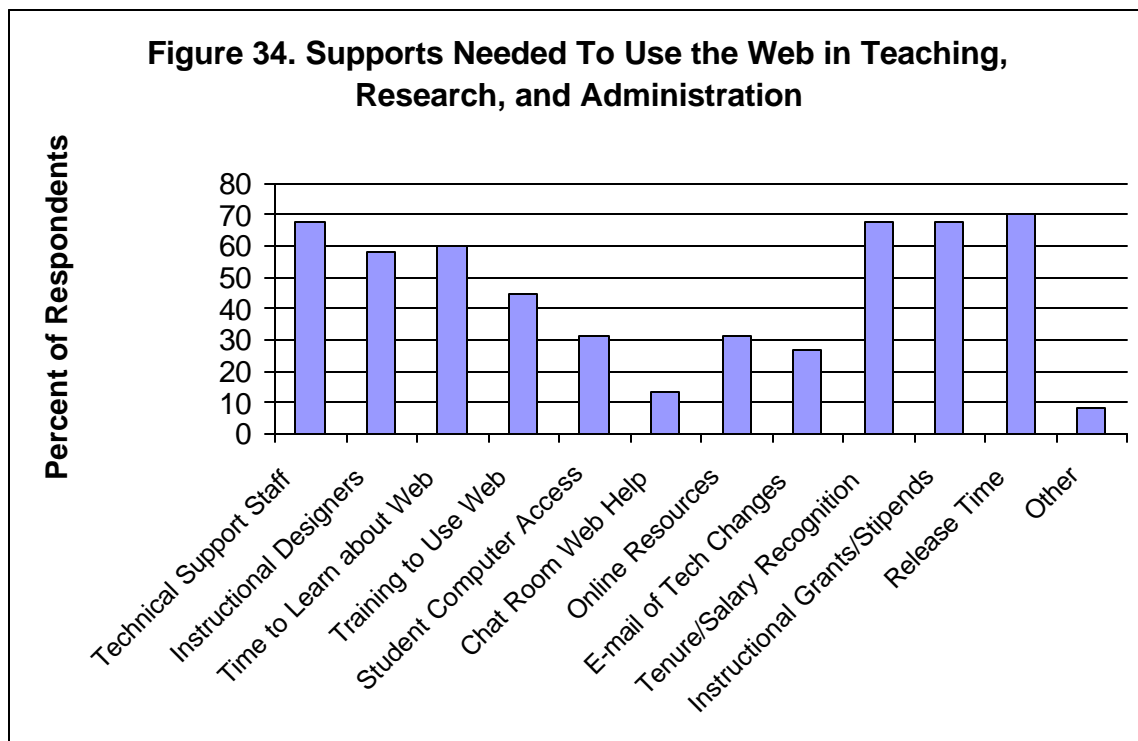
These support needs correspond closely with the perceived obstacles, mentioned earlier, including the need for greater technical support. Given these findings, it appears that a multi-pronged approach to online instructor support and training is warranted.

As indicated in Figure 35, respondents at public and private institutions expressed some significant differences in the types of support they needed. Those in public institutions were significantly more likely to ask for online resources to use the Web effectively in their teaching, research, and administrative duties (35 percent) compared to those in private institutions (18 percent). They were also significantly more likely to suggest that they needed instructional development grants or stipends to support their online teaching efforts (72 percent) than those at private institutions (55 percent). Along these same lines, they were significantly more inclined to ask for release time (77 percent) than those in private institutions (55 percent).

Perhaps faculty members at public institutions are simply more demanding. For instance, other areas wherein faculty members in public institutions indicated that they needed more support to effectively use the Web in their scholarly pursuits than those in private institutions included the need for instructional design help (59 percent versus 48 percent), time to learn about and utilize the Web (62 percent versus 50 percent), greater training regarding how to use the Web in teaching (33 percent versus 25 percent), greater access to computers for students (35 versus 18 percent), and recognition for tenure, promotion, and salary review decisions (71 versus 61 percent). Technical support staff was identified as necessary by about 68 percent of both public and private institution respondents. It is clear that those in public institutions have higher expectations of the support structures required before adopting the Web in their teaching and other duties. Whether they have differing instructional standards, course loads, or support histories and experiences is not known and is an open question for further investigation.

Figure 35. Supports Needed for Web-Based Teaching By Institution Type
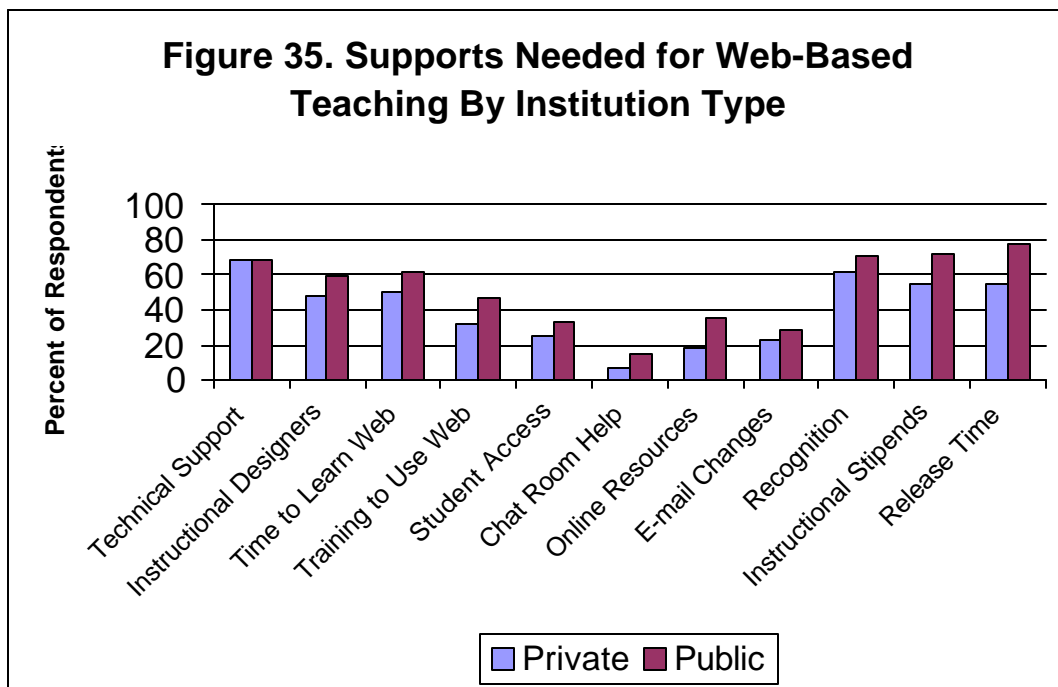
In exploring the data by size of institution, there were no significant differences in Web-based teaching support. However, from a descriptive standpoint, faculty members at institutions with enrollments under 3,000 students pointed to the need for instructional design support (64 percent compared to 55 percent at other institutions) and training on how to use the Web in teaching (52 percent compared to 43 percent at other institutions). Instructors in medium-sized institutions were more likely to select time to utilize the Web (65 percent compared to 58 percent at larger and smaller institutions) and student access to computers (39 percent compared to 28 percent). Instructors at the medium and large institutions favored recognition for tenure, promotion, and salary review decisions (70 percent compared to 62 percent at small institutions), development grants and stipends (70 percent compared to 57 percent at small institutions), and release time (73 percent compared to 62 at small institutions). While none of these differences were significant, they do provide an interesting picture of Web-based teaching support needs at different sized institutions.

When comparing those in institutions larger and smaller than 10,000 students, respondents at the smaller colleges and universities were more likely to select technical support and student access to computers as important issues, whereas instructors at the large institutions were focused on having more online resources, recognition, and development grants or stipends. Gender differences in terms of perceived supports were minimal.

3.9 Online Communities, Services, and Resources Needed

Online Communities for Resource Sharing
As indicated throughout this report, the Web offers new opportunities to share resources with colleagues online (Barab & Duffy, 2000; Bonk & Wisher, 2000). The survey participants were asked whether they would be interested in becoming part of a no-cost community for sharing of course resources and teaching ideas. Given the present sample was derived from the WLH and MERLOT Web sites, it was anticipated that they would be interested in such a course-sharing resource. In fact, 82 percent of the respondents expressed interest in joining such a community.

When asked what components or features of such a community would make it more likely that they would regularly participate, one feature, sharing "pedagogical ideas," was clearly preferred among these instructors (see Figure 36). In fact, more than three-fourths of the respondents selected this item. As with their earlier responses to survey items about instructional activities for online critical and creative thinking, these early Web adopters remain hopeful that an online community will provide this. Similarly, more than 60 percent of the respondents wanted any free course-sharing resource community to offer expert advice as well as answers to teaching problems. Somewhat surprisingly, well over half of the respondents indicated that online classroom management tips or advice would benefit their teaching. The next most frequent response for participating online was professional recognition, selected by slightly more than 4 in 10 instructors.

Figure 36. Important Features of Free Course-Sharing Community
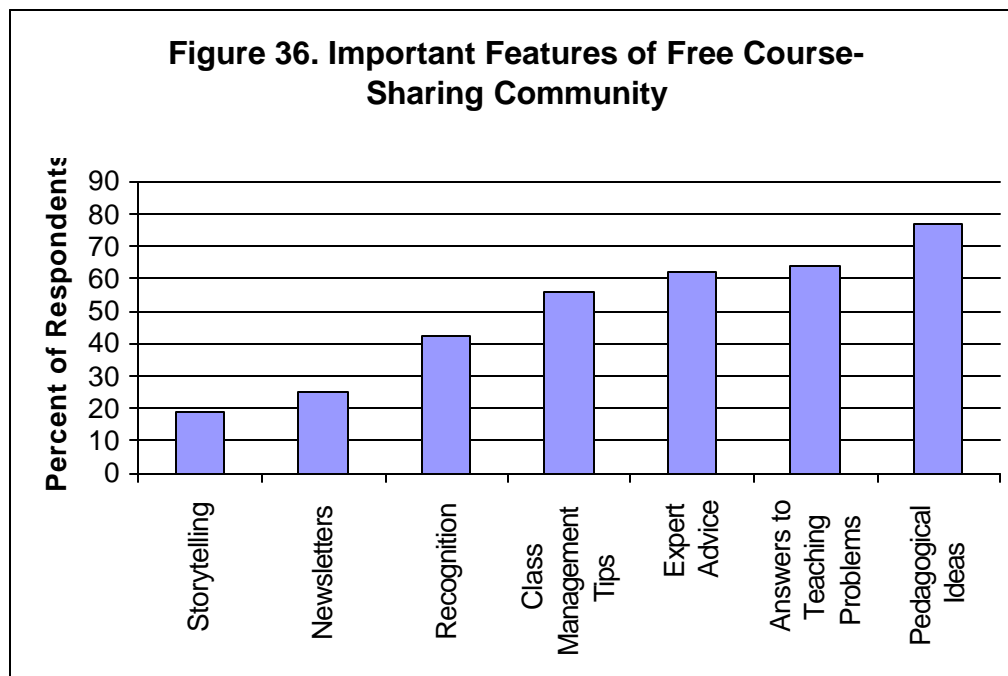
Several items were less important than anticipated. For instance, only a quarter of the respondents indicated that they would participate in a free online community as a result of an online newsletter. Even fewer, less than one in five, would regularly participate in order to engage in online storytelling. This is similar to earlier responses that only one fourth of respondents wanted courseware tools for sharing stories with other instructors.

A few respondents listed other reasons to participate such as access to lesson plans, simulations, laboratory experiments, collaborative projects, discipline specific issues, legal counsel on intellectual property issues, and time-saving tools. Some offered to make their resources (e.g., graphic files) available to others. Still others thought that such a resource would help them get paid for their knowledge and expertise.

What is apparent is that those teaching in college settings wanted online instructional help and communities of people with similar interests. Instead of simply sharing war stories, they preferred access to useful information, advice, and pedagogical ideas. Naturally, some members also would like some reciprocity for that information sharing, while others want to use the online community as a means of professional recognition.

Useful Web-Based Services, Resources, and Information
Finally, we asked about the types of Web-based services, resources, and information to which they would like to have access as instructors. As indicated in Figures 37 and 38, there were 18 choices including online bookstores, course listings, mentoring services, papers, survey tools, conference information, library resources, and downloadable freeware. Whereas Figure 37 focuses on Web-based information resources to which instructors want access, Figure 38 details their need for different Web-based technology and commercial resources.

With all the possible choices, the most vital services to which these instructors wanted access were online course design and development help, which 73 percent selected. Such help might entail guides, courses, workshops, newsletters, tutorials, and conferences. Whereas the previous figure revealed a thirst for pedagogical advice on the Web, Figure 37 also points to an interest in course design and development assistance.

The need for other teaching resources was also important to these instructors. While 71 percent indicated that electronic papers, journals, and technical reports would be helpful to their online teaching efforts, another 70 percent selected online teaching help. Examples of the latter included tips and guides, demonstration courses, workshops, newsletters, tutorials, and conferences. Fifty-four percent indicated that online library resources were worthwhile, while roughly half noted instructional value in the following: online conference information (52 percent), online course listings (50 percent), and online workshops and institutes (48 percent). Only 1 in 5 respondents, however, noted that online listings of courseware companies would be needed for their teaching. Once again, it was unclear whether they expected those services to be provided commercially or free. With the requests for online papers and journals, online library resources, conferences, course listings, and workshops or institutes, there definitely is a great need for more effective and useful Web-based information resources and services for college teaching.

Figure 37. Web-Based Informational Resources and Services Useful to College Instructors
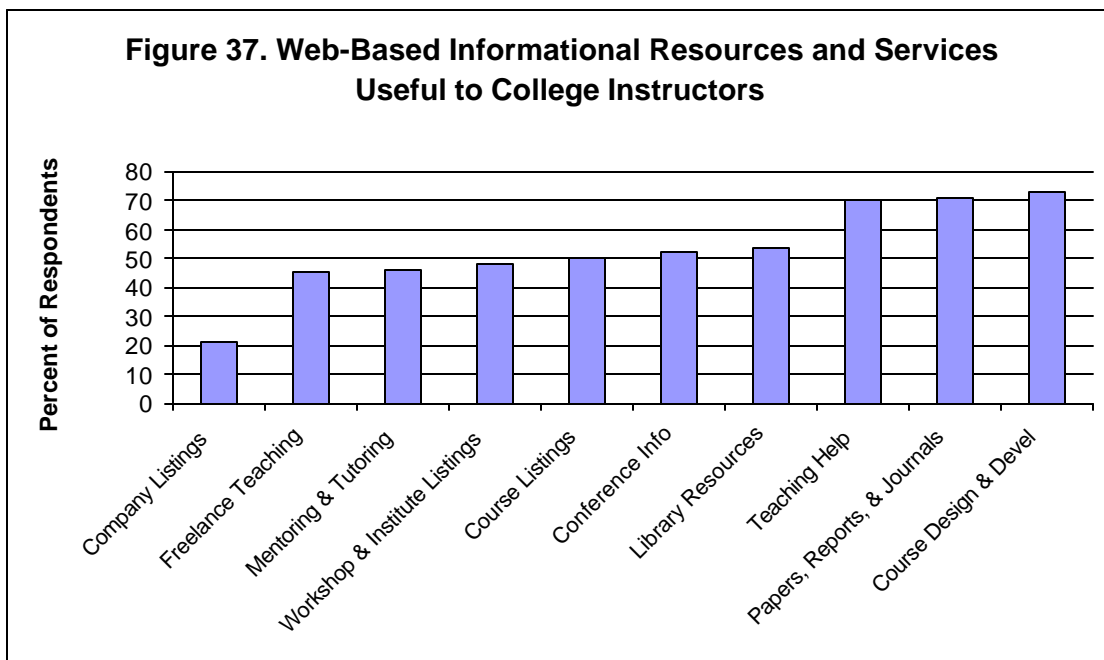
Other teaching or instructional services were also fairly popular among our respondents. Online mentoring and tutoring services, for instance, were selected by 45 percent of these college instructors, though it is unclear whether they expected such services to be free or if they felt that their institution should pay for such services. In terms of marketing themselves, 45 percent wanted access to freelance teaching possibilities. Once again, many of these instructors predicted that their teaching futures would involve working

outside their home institution.   Naturally, the Web opens up such new and exciting instructional outlets and services.   While faculty member entrepreneurship is on the rise due to the Web, it is also bound to raise many institutional and ethical issues and dilemmas related to hiring practices, compensation, and promotion and tenure policies.

The desire for commercial services for technology, bookstores, and instructional resources received mixed feedback (see Figure 38).   Of course, the world of higher education often struggles with budget allocations for hardware, software, and other resources compared to the corporate world.   Thus, it was not too surprising that nearly 60 percent of the respondents wanted access to downloadable freeware and shareware in their teaching.   Nearly half would find trial or demonstration software useful as instructors and would like access to specially priced computer technology and software. Roughly the same number of respondents also would like Web-based survey and evaluation tools as well as Web-based simulations and experiments.   Yet, fewer than one in five would find online resources with specially priced instructional resources (e.g., paper, pens, letterhead, etc.) useful.   Around half would find online bookstores valuable; however, just 35 percent indicated that online university bookstores and merchandise would be utilized within their instruction.

Figure 38. Web-Based Technology and Commerical Resources Useful to College Instructors
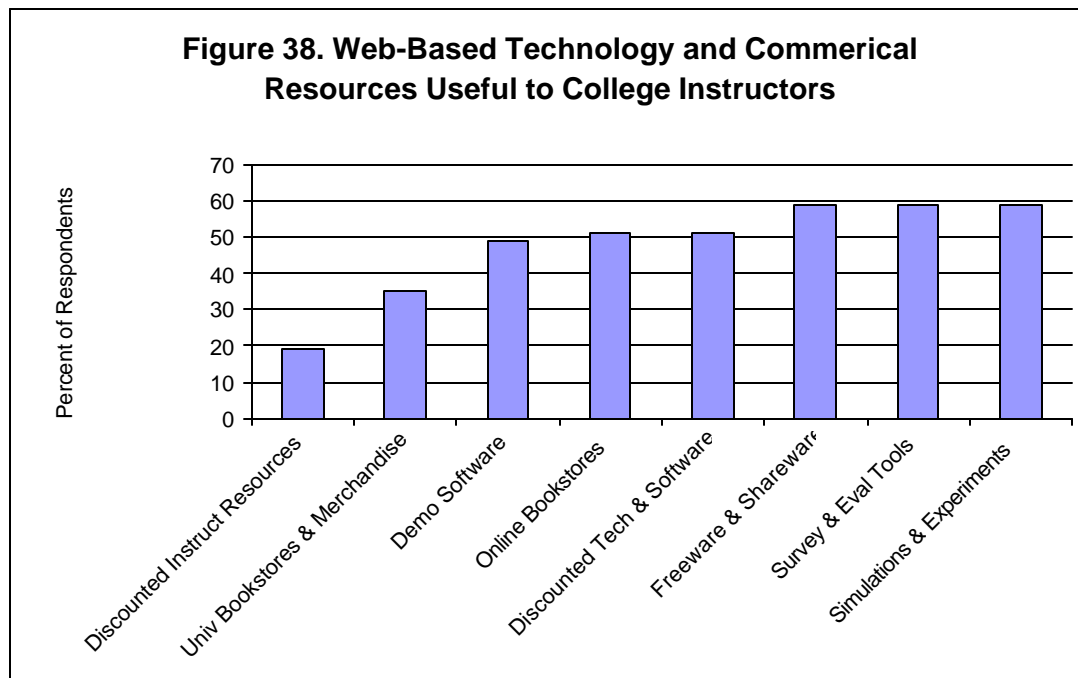
3.10 Final Comments

Some of these early Web adopters provided rather strongly worded final comments.   For instance, those with reservations about Web-based teaching in higher education indicated that they were disappointed with the rush to use technology before research backs up the use.   Comments about poor quality materials and unimpressive courseware were prevalent.   Others were disappointed with their home institution since it failed to support

their online activities, thereby forcing them to volunteer and self-finance their Web-based teaching initiatives.   Still, others viewed their institution as motivated simply by a need to save money.   In fact, one person claimed, "Universities are ripping off their faculty.   And, they are going to shut down participation in free-lance operations.   So, it would be in your interest to get some legal challenges going to challenge the monopoly."

Another respondent thought that if universities claimed ownership of online course materials, then instructors must get compensated with both royalties and recognition.   In some places this is already occurring.   For instance, the University of North Texas has instituted a policy that pays instructors a 4 percent royalty of the tuition from every student when other instructors use their online course materials (Young, 2001). Undoubtedly, similar policies are on the way.

Perhaps one respondent summarized the situation best when arguing that the key problem here is that administrators did not share the ideas or goals embedded in much of this survey.   According to this individual, there is minimal support, money, and focus for building cohorts of competent online college instructors.

Others were somewhat more positive.   One instructor, in fact, was "convinced that inter-university collaboration and pooling of resources is the way forward."   This person suggested that teachers and lecturers needed time to acquire new skills and materials for the Web as well as opportunities to share programs and interactive activities.   In this way, more people with disabilities and financial hardships could access education and better society.   Another instructor viewed online course offerings as a means to teach students about effective technology use.   Still another viewed it as something he or she could utilize more fully after retirement when teaching part-time courses.   Others were interested "in doing freelance teaching now" and wanted ideas on how to start the process.

In touching on many of these themes, one instructor's hope for the future was extremely detailed and optimistic:

> "I have always had the vision of a virtual university (accredited in some way), where qualified faculty could teach courses they were skilled in, to an Internet audience. A university where faculty were paid for these classes and the number of students they taught.   These faculty could come from any institution or not be affiliated with an institution at all.   An arena where faculty who love to teach in a virtual world, could teach their subject to students who could receive their education totally online.   The faculty would not be employees of the virtual university, but would be paid for quality and quantity of courses taught and number of students enrolled in their online class. There are many faculty who are caught in the middle of traditional university life and virtual education opportunities, who would love the opportunity to teach their classes outside the traditional boundaries, and be compensated for the work they do in this arena."

Higher education institutions and corporations should find a myriad of implications from these final survey questions. For instance, college professors and lecturers want access to online information and various collaborative and interactive technology resources within their teaching. Clearly, these faculty respondents were more comfortable than most about Web-based teaching, but their overwhelming support for a diverse set of online tools and services should motivate many entrepreneurs to take a lead role here. There are numerous resources that college professors and instructors can utilize in their teaching. First and foremost they want pedagogical tools and instructional design support. As part of such support, there is a need for sample courses as well as Web-based teaching institutes. Since these college instructors were not afraid of receiving help in their teaching no matter how long they had been teaching, more online Web-based teaching services will likely be applauded.

This survey of early Web-adopting faculty members provides an interesting look at online teaching experiences, supports, obstacles, and preferences. Online teaching in an online world is not simple but it is bound to increase dramatically during the upcoming decade. The following section offers some conclusions and recommendations for those contemplating new programs or activities in this area.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The results of this survey paint both pessimistic and optimistic portraits of the state of Web-based teaching and learning in higher education. While a myriad of collaborative tools and institutional support mechanisms were identified as needed, many of the early adopters of the Web for college teaching already have extensive experience with both fully online and blended courses. And they seem to enjoy online teaching despite barriers related to time, training, recognition, and overall institutional support. Moreover, new opportunities to embed the Web in instruction as well as to share the results online in an online community of peers were revealed throughout this survey report.

What is the profile of the faculty member who shares information online? As expected, most of the early Web resource-sharing instructors are at large public institutions with fairly extensive teaching experience. A large percentage are males with doctoral degrees. They find out about course sharing resources through advice from colleagues or their institutions. They tend to look at online course sharing as vital to their personal growth or simply believe that sharing ideas, strategies, or courses is important. In return, students and other instructors contact them. It is almost as if the WLH and MERLOT provide a pedagogical sharing outlet that they find lacking in traditional teaching environments. Not surprisingly, then, these Web-experienced college instructors are asking for advancements in Web-based pedagogical and collaborative tools for their teaching.

What are their attitudes about these online environments? Many of these early Web adopters have strong beliefs and opinions. First of all, they believe that they own their online courses, even though their institutions have unclear guidelines about ownership. They also believe that accreditation is needed to maintain quality within distance learning offerings. They are more likely to endorse undergraduate and master's degrees earned entirely online than doctoral degrees. They perceive that access and learning are more prevalent motives for institutions adopting online education than profit. While they recognize that teaching online is more time-consuming than teaching in traditional classrooms, they simultaneously recognize that a growing portion of their instructional load will increasing shift to online environments. In return, they would like additional salary, royalties, course development stipends, or, at the very least, some instructional design and technology support.

What types of online experiences do these early Web adopters have? Most of these instructors have experiences teaching in Web environments, including both partially online and fully online courses. In terms of course delivery, many of their institutions offer a choice between two or more platforms. Courseware decisions are made primarily by university administrators, though departments, faculty, and technical support personnel are often consulted in such matters. Courseware tools that are appealing to

early Web adopters are those that are flexible, easy to use, comprehensive, interactive, well supported, functional, and attractive.

What tools are needed? Early adopting faculty members are looking for tools to share syllabi, post cases and lecture notes, upload and download files, provide feedback, hold discussion forums, demonstrate ideas, and foster student collaboration. In addition, they would like access to online journal articles and papers, glossaries, teaching resources, and search engines. Conference information and library resources are also viewed as helpful. These professors and instructors want to utilize the Web for pedagogical ideas and expert advice or answers to their teaching problems. And while they ask for additional technical support and instructional design aids, they are fairly savvy in their use of the most common Web tools.

What are the online supports deemed necessary for effective online teaching? And what are the key obstacles or barriers common to online teaching? In terms of supports, college faculty members would like to be recognized for their efforts from their institutions including release time, stipends, or additional salary. In regards to obstacles, preparation time and technical support were the key barriers noted by our respondents. It appears that college instructors would like technical or instructional design help as well as training in Web-based instruction. In addition, training to simply use the Web as well as reports and guidelines about teaching online were perceived as valuable.

What's next? Many college faculty members anticipate teaching online more frequently in the future, especially as freelance instructors. Before this occurs, it would be useful to develop online communities for these freelance instructors. To establish such communities, some colleges and universities might provide Web-based support mechanisms including online course development and teaching, library resources, professional information about upcoming conferences, survey and evaluation services, simulation tools, freeware, teaching advice, mentoring or tutoring help, and relevant online papers and reports. Teaching is complex. The trends toward more online teaching and learning in the upcoming decade will not simplify this.

Whereas other surveys of college instructors have focused on technological resource availability, instructor skills and attitudes, and institutional policies, what sets this particular study apart is the focus on pedagogical tools and practices. Benchmark data collected here help predict and evaluate future trends in online teaching and learning. As Web sites evolve beyond the WLH and MERLOT, we enter an era of knowledge sharing at perhaps the highest level ever attempted. The Web already is the largest collection of instructional expertise on this globe. Hopefully, this report provides some indicators as to where these course-sharing and online teaching efforts are headed.

As this survey indicates, entering the world of Web-based teaching can be complex for new instructors (Bonk, Kirkley, et al., in press). Certainly, signals sent from early Web adopters and resource sharers provide brief glimpses of what is possible. They note many weaknesses as well as opportunities within this new teaching and learning arena. They understand most of the obstacles and necessary support structures holding back

other faculty. Perhaps some of them will serve as mentors for others adopting such an approach. In fact, that is one of the recommendations listed in the next section of this report.

4.2 Recommendations

This report detailed many online teaching findings and suggestions for college instructors, administrators, and higher education institutions. Listed below are seven recommendations based on the data from this survey. The first three relate to instructor development including training, recognition and support, and sharing of expertise. The other four recommendations are more generally related to online learning policy, research, courseware and tool development partnerships, and pedagogy.

1. **Instructor Training:** Colleges and universities need to consider how they are training faculty for teaching in an online world. For instance, instructional design support and guidelines should help instructors get acclimated to this new form of teaching. In addition, they might offer institutes, courses, online mentoring, and instructional design help. Time allocated to training is a key consideration. Early Web adopters might be utilized as mentors for new faculty members.

2. **Instructor Recognition and Support:** Colleges and universities need to consider how they recognize online teaching efforts in promotion and tenure. They could also give release time, instructional development grants, stipends, and other forms of assistance.

3. **Instructor Sharing of Expertise and Resource Exchange:** Higher education institutions should create ways for faculty members to share online services, expertise, and resources as well as mentor new instructors. They might also develop tools for instructor sharing of activities and resources, including tools for the sharing of reusable knowledge objects or perhaps some type of a knowledge exchange program.

4. **Online Learning Policies:** Higher education institutions need to develop clear guidelines or policies regarding the ownership of online course materials and applicable royalties. They should have policies related to freelance online instruction for other institutions. They might also attempt to clearly articulate why certain courseware tools, policies, and expectations have been adopted related to Web-based instruction.

5. **Online Learning Research:** Before drafting new e-learning policies, colleges and universities should review existing research. They might also provide internal mini-grants for faculty members to research their own program and course development efforts. Similarly, internal research related to the perceived obstacles to online learning as well as case studies of successful faculty member adoption may be helpful. Results of such research should be made available to all professors and instructors of the institution.

6. **Online Learning Courseware Development Partnerships:** Rather than every large higher education institution attempting to spend money to develop its own courseware platform or shell, colleges and universities should seek partnerships with courseware companies wherein they serve as testbeds for new tool development efforts. They might also seek to form tool development consortia with other institutions. Technology centers and research institutes within higher education could perform usability studies and help co-develop products in return for lowered courseware fees.

7. **Online Learning Pedagogy:** In conjunction with the last recommendation, higher education institutions need to demand and perhaps help develop and research different types of pedagogical tools for e-learning that foster student higher-order thinking and collaboration. Once developed, tools for fostering critical and creative thinking as well as teamwork online should be showcased to faculty, students, and administrators.

As the above recommendations indicate, there were a variety of interesting and important findings within this study. What this study clearly reveals is that while many faculty members are adopting Web technologies in their teaching, the levels and types of support structures vary tremendously. As new tools, courseware platforms, and standards are developed, there is a need for online learning leadership and exemplary models or frameworks for Web-based instruction. There also is a pressing need to openly share what we know about online learning with both the early Web adopters of this study as well as with potential Web instructors in free online learning communities. When this occurs, tools for online sharing of resources will have a major impact on college learning and instruction in this decade and beyond.

As with most studies, additional research is needed to confirm and extend these findings. Interviews and focus groups might provide more detailed information. Other research might explore how courseware tools are paid for, the perceived quality of online certificates or institutes, the forms of online training for instructors, the types of technical support provided for students and faculty online, how costs are determined for online courses, and the perceived learning and motivational factors in online learning. We hope to address some of these issues in our upcoming studies.

There are many directions for higher education institutions to take in terms of online learning support structures and expectations. No matter what directions are decided, learning in college will never be the same. Online teaching in an online world will also guarantee that post-secondary teaching will never be the same either.

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