Student Perceptions of WebCT in a Web-Supported Instructional Environment: Distance Education Technologies for the Classroom

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Abstract

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Introduction

A recent report by the National Association of State Universities and Land-Grant Colleges (1999) stated that 81% of adults believe that furthering their education is important for them to be successful. Colleges and universities have responded to the growing demand for post-secondary education by developing and offering courses at a distance. Distance

- Provide content in instructional design, technology use, and software use.
- For faculty who will teach on-line, emphasize Web development/editing software and Web course tool software packages.
- Provide training at various knowledge levels (beginner, intermediate, advanced), but focus more efforts on beginners until all faculty have similar, adequate knowledge.

In addition, training and development specialists and university administrators may want to look at ways to provide increased incentives to faculty who complete distance education training. Based on the results of this study, these incentives do not have to be costly. Incentives in the form of graduate assistant support and release time for faculty to design and execute their distance education course seem to carry the most weight with faculty overall. Other, less tangible but perhaps more difficult to implement incentives could include academic recognition and weight given in the promotion/tenure process.

In general, this study supports what distance education researchers have expressed for some time: training is critically important to adequately prepare faculty for the distance education environment. Faculty want quality training, the focus of which may continue to change along with the rapid evolution of distance education technologies. Faculty believe such training will improve them personally and professionally, providing an intrinsic reward. However, faculty members also note that to be able to implement what they have learned, they need time, resources, and extrinsic motivation in the form of incentives (graduate assistant support, release time, recognition, financial rewards, hardware, or software).

This suggests that although intrinsic motivations are important, university administrators must think carefully about establishing extrinsic rewards and motivation if they want to be successful in encouraging faculty to make full use of the technologies and training available. As one faculty member said, "The trial and error methodology many of us use in upgrading our computer skills is time-consuming and at times quite frustrating. This is not a minor problem and there are no short and easy answers; however, that seems to mean that we
they generally believed that training should be in a traditional formal format, such as a prescribed course or set of training materials, they also seemed to feel that the best format for them would be self-paced training or a combination of formal, informal, and self-paced training. Interestingly, faculty respondents were almost evenly split on whether training should be mandatory or voluntary for faculty teaching distance education courses.

Faculty in this study wanted the ability to select or assist in the selection of distance education training topics. They felt that training should be conducted in short sessions and over several weeks. Incentives should be in the form of graduate assistants to help faculty prepare for and execute the course, and release time to plan for and implement the course.

Extending from the Miller and Carr (1997) study, faculty respondents in this study, in almost equal measure, felt that training content should cover instructional design, technology use, and software use. And, perhaps in recognition of the major impact on-line interactive technologies have made in distance education, faculty indicated that the most important skills for them to learn right now were Web editing/development and Web course tools. Concerns voiced most often were lack of time, lack of resources, and a need for ways to motivate faculty to take training and to teach distance education courses.

Because time commitments and constraints are a concern, faculty in this study wanted training that fit their schedules. They wanted short workshops, held over several weeks that would not take large portions of their time. Self-paced training, especially, was preferred.

As a result of this needs assessment, several potential recommendations for distance education training program development could be made:

- Conduct training programs in short sessions/workshops over several weeks.
- Implement self-paced modules, using CD-ROMs, the Web, and/or videotapes.
- Allow faculty members to select some of the topics, but provide prescribed courses/programs as part of a faculty member’s overall training program.

Distance education methods include those that permit any education received by a student to occur when the teacher and the student are separated by location and/or time. Distance education relies on the students’ abilities to be self-directed and internally motivated. This type of education is particularly appealing to students whose lifestyle (time and distance constraints) does not allow them to take advantage of traditional classroom methods. To optimize methods of delivering instructional programs, a need exists to examine continually technologically mediated delivery strategies (Murphy & Karasek, 1999); which is to say, how can teaching be improved through the use of technology (Means, 1994)?

Web course tools (e.g., static and dynamic Web pages, threaded discussion groups, E-mail, chat, instant messaging, streaming media/video, animations, application-sharing, IP audio/video conferencing) are being adopted and used increasingly by teachers to optimize delivery of instructional material (Olliges, Wernet, & Delicath, 1999). Web-based instruction can be classified into one of three categories: Developed, dependent, or supported (Murphy & Karasek, 1999). Courses delivered entirely on the Web are called fully developed. Web-dependent courses have major content components on the Web, but rely also on other delivery methods. Courses that have auxiliary materials, links, additional readings, and support materials on the Web are referred to as Web-supported. The subjects in the study presented here were enrolled in a Web-supported course.

Web course tools, like all educational technologies, may affect educational outcomes. Educational technologies can contribute to students learning stated objectives of a course, can be neutral, or can distract from learning. A widely-supported position is that technology can contribute to student success (National Center for Education Statistics [NCES], 1999).

For the purpose of this study, student success was defined as the accomplishment of the measured course objectives. According to the Web-based Education Commission (2000),
Web-based instruction supports student-centered learning, takes advantage of students' unique competencies, and enables students to participate in lifelong learning. In many cases, technologically supported instruction facilitates more rapid and deeper understanding of the course objectives (Murphy & Karasek, 1999).

Technology can also distract from learning. Donaldson and Thomson (1999) found that Web course tools support learning-centered approaches to instruction and facilitate communication among students and instructors. They cautioned, however, that Web course tools might not be useful when they act merely as a conduit through which instruction and information are delivered.

One emerging technology that holds promise for improving instructional effectiveness and efficiency is WebCT.

WebCT is a commercial software set of Web course-development tools for creating instructional environments at a distance (WebCT, 2001). Little research has focused on the effectiveness of WebCT as a delivery strategy. Olliges, Wernet, and Delicath (1999) found that student satisfaction with WebCT was significant and positively related to prior experience of students and instructors with WebCT. Further, high student satisfaction with WebCT allowed instructors to focus on course content instead of course tools. Freeman (2000) found that lack of reliable access, both at home and on-campus, to computers and the Internet was a major barrier that negatively affected students’ ability to participate in courses that used WebCT. Overall, however, Freeman (2000) reported that students felt WebCT had a positive impact on their learning.

As on-line teaching continues to grow, more information about the impact that Web course tools, such as WebCT, have on student learning is needed to make decisions about the appropriateness and effectiveness of Web-based instruction (Heinich, Molenda, Russell, & Smaldino, 1999).

**Purpose and Objectives**

The purpose of this study was to investigate student perceptions of the use of WebCT to support instructional objectives in a Web-supported environment.

<table>
<thead>
<tr>
<th>Table 3. Incentives Faculty Would Like to Receive After Completing Distance Education Training</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Incentive</strong></td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Financial incentive</td>
</tr>
<tr>
<td>Hardware</td>
</tr>
<tr>
<td>Software</td>
</tr>
<tr>
<td>Graduate student</td>
</tr>
<tr>
<td>support to develop</td>
</tr>
<tr>
<td>course</td>
</tr>
<tr>
<td>Graduate student</td>
</tr>
<tr>
<td>support to execute</td>
</tr>
<tr>
<td>course</td>
</tr>
<tr>
<td>Release time the</td>
</tr>
<tr>
<td>semester prior to</td>
</tr>
<tr>
<td>teaching course</td>
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<tr>
<td>Reduced course load</td>
</tr>
<tr>
<td>during the semester</td>
</tr>
<tr>
<td>the course is offered</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Benefits and Issues of Training**

In response to a series of open-ended questions, faculty members stated that they believe the university does receive benefits as a result of faculty completing distance education training. Faculty said that better interaction with students at a distance, better teaching methods, and more students accessing courses result from distance education training. The primary benefit for individual faculty members ranged from being able to reach more people, reducing their teaching load, and making a greater impact across the state to issues of personal satisfaction and professional development. In response to a question that asked respondents to indicate what they perceived to be the primary problem or issue critical to distance education training, respondents seemed to agree that it was lack of time and resources. Faculty members also indicated that incentives, motivation, and control over the distance education class were concerns.

**Discussion/Conclusions**

Faculty respondents in this study indicated overwhelmingly that they did need training in distance education. Although
Specific objectives of the study were to describe and explore perceptions of students enrolled in AGED 440: Principles of Technological Change regarding:

1. Whether or not the use of WebCT contributed to their success in the course.
2. Their ability to access and use on-line course material.
3. Their ability to access and track grades and progress on-line.
4. The creation of on-line learning environments among the students in the course.
5. Their overall perceptions of WebCT.

Methods and Data Sources

The subjects were students (N=111) enrolled in AGED 440: Principles of Technological Change at Texas A&M University during the Fall 2000 semester. AGED 440 is an upper division, undergraduate-level course focusing on processes by which professional change agents influence the introduction, adoption, and diffusion of technological changes. The course was supported with WebCT. At the beginning of the course, students were given a general introduction to WebCT. They were instructed how to create a user name, and were shown the course materials and WebCT features available to the class. Additional support and instruction were provided to students individually as requested throughout the semester. All students in the course created a user name and logged onto WebCT at least once. Through WebCT, students were able to access grades and determine their progress in the course; access and print course materials; and create an interactive on-line learning environment between and among students and instructor through E-mail, threaded discussion, on-line testing, and study guides. The research design for this study was descriptive and exploratory in nature (Fraenkel & Wallen, 1999). A census of all students enrolled in AGED 440 was conducted. The results of this study are not generalizable.

The survey instrument was pilot-tested with twenty students enrolled in another course in the Department that was Web-supported. Minor wording changes were made as a result of the pilot study. The instrument consisted of open-ended and closed-ended research questions:

**Table 2. Length of Distance Education Training Program**

<table>
<thead>
<tr>
<th>Length</th>
<th>Frequencies (n)</th>
<th>Percentage of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full day</td>
<td>4</td>
<td>7.8</td>
</tr>
<tr>
<td>Two full days</td>
<td>3</td>
<td>5.9</td>
</tr>
<tr>
<td>Full week</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Series of sessions over several weeks</td>
<td>25</td>
<td>49.0</td>
</tr>
<tr>
<td>Self-directed, on faculty member’s time</td>
<td>14</td>
<td>27.5</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>3.9</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2</td>
<td>3.9</td>
</tr>
</tbody>
</table>

With respect to incentives, responses ranged from financial and hardware and software incentives to release time, although the majority of respondents did indicate that, if given an option, they would prefer to receive graduate assistant support as an incentive to completing distance education training (Table 3).
1. Did WebCT contribute to your success in this course? Please describe.

2. What influenced your decision to purchase or not purchase a course packet?

3. Did you access and track your grades and progress in the course on-line? If yes, what did you think of this process? If no, why not?

4. Did you use WebCT to create an on-line learning environment among students through E-mail, threaded discussion, on-line testing, study guides, etc., to increase your success in this course? Why or why not?

5. Please provide any additional comments regarding the use of WebCT in this course.

Responses were independently categorized and coded by trained scorers based on themes identified in written responses (Miles & Huberman, 1994). The scorers were in complete agreement for 500 (94%) of the 534 responses. Student responses to open-ended statements were categorized as positive, neutral, or negative and coded 1, 2, or 3, respectively. “Yes” responses to closed-ended statements were categorized as positive and coded as 1. “No” responses to closed-ended statements were categorized as negative and coded as 3.

Content validity of the instrument was established by a panel of experts consisting of faculty members at Texas A&M University. A panel of graduate students, also at Texas A&M University, established face validity. Evidence of reliability and validity, additionally, was established by documenting the bases for inferences, describing the context in which the questions were asked, documenting the sources of written responses, and gathering the data in their natural setting (Fraenkel & Wallen, 1999). The instrument was administered using WebCT on-line testing tools. Participants were given two weeks to respond. Once participants accessed the password-protected instrument, they had one opportunity to respond to each question. Responses to the questions were then submitted on-line to the researchers. Eighty-nine students participated in the study. A response rate of 80% (n=69) was achieved.

Faculty respondents were interested in learning about the following specific software applications (in order of rank):

1. Web development/editing,
2. Web course tools (WebCT),
3. Graphic animation software/photography manipulation,
4. Interactive on-line elements (chat rooms, bulletin boards),
5. Presentation software (PowerPoint),
6. Graphic design.

Faculty ranked the primary technology they would use in a distance education setting as follows:

1. WebCT,
2. Web,
3. Videoconferencing,
4. Video/audio delivered over the Web, and
5. Audio delivered over the Web.

When asked a follow-up question as to what skill level they saw themselves at with respect to the primary technology with which they planned to teach, responses suggested that many faculty perceived themselves as novices. In terms of skill level, 34 said they were beginners, 15 considered themselves intermediate, and only three considered themselves advanced.

When asked an open-ended question as to which technology or software was most important for faculty to master, respondents indicated that Web-related software was most
informal sessions—"brown-bag-type" meetings; 24 (45.3%) said self-paced/self-directed (CD-ROM-, videotape-, or Web-based); and six indicated "other," including a combination of formal, informal, and self-paced training. When asked which of these formats most appealed to them, 12 (22.2%) said formal, four (7.4%) said informal, 20 (37%) said self-paced, and 15 (27.8%) said a combination of self-paced, informal, and formal formats. Faculty were almost evenly split when asked if the training should be mandatory, with 51.9% saying it should be mandatory, and 48.1% saying it should be voluntary.

Faculty also said that the training should consist of both topics that are prescribed by trainers and those that are chosen by faculty members. Nine said the faculty member should choose the topic; two said the topics should be prescribed, with faculty having no choice; and 39 said the training program should be selected with a combination of chosen and prescribed topics. (See Table 1 for frequency responses.)

<table>
<thead>
<tr>
<th>Table 1. Distance Education Training Formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format Training Should Take</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Frequencies (n)</td>
</tr>
<tr>
<td>Formal</td>
</tr>
<tr>
<td>Informal</td>
</tr>
<tr>
<td>Self-Paced/</td>
</tr>
<tr>
<td>Self-Directed</td>
</tr>
<tr>
<td>Combination</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>53</td>
</tr>
</tbody>
</table>

*Tabulation of open-ended response.

Respondents' Rankings of Training Components

When asked which of three content areas (instructional design, technology use, and software use) the training should consist of, 76% of respondents chose software use, including specific software applications; 73% chose technology training; and 62.7% chose instructional design (respondents could choose more than one item). Rankings for specific equipment

Results

Objective 1

Most students (72%) indicated that the use of WebCT in AGED 440: Principles of Technological Change contributed to their success in the course (see Table 1 on page 42 for Objectives 1-5). An example comment from one of the students who indicated a positive experience was "WebCT has allowed me to look up homework and view other class material on the Web. I like WebCT because you can send messages to teachers and they can send any important notes to anyone. Also, WebCT allows me to pull notes and reviews for quizzes or exams."

However, 21% of students did not feel WebCT contributed to their success in the course. An example comment from one of the students who indicated a negative experience noted WebCT "was hard to get onto and some people have a hard time accessing computers ... plus the regular Web-site was working fine." Seven percent of respondents had neutral perceptions of WebCT. One student stated, "The only thing this has done is make sure I get my grades faster. I think if we had the other things such as quizzes and things like that, it would be more useful."

Objective 2

Seventy-six percent of the participants indicated that they purchased the course pack even though the materials were available free through WebCT. A typical positive response to this question was, "The reason I purchased a packet was because the packet had everything I needed in it, and I did not have to worry about going to the computer lab every week and reading the material on-line." Twenty-four percent of participants did not purchase the course pack and relied solely on the on-line materials. One student noted, "No, I did not purchase the packet. I printed all the notes off of my personal computer at home. It is easier to print at my home." Another student, however, stated, "No, I didn't buy a course packet, but now I wish I would have, because it won't always print out everything. It has a lot of errors, and then I don't have the stuff for class."

Once students accessed the course schedule and materials, they could read and print course materials (Topics) for each class session. The course material was presented in Adobe®
prescribed course or set of learning modules. Four (7.9%) said they would like to receive formal training—2 (3.6%) said they were interested in distance education training. 17 (39.8%) said they were interested.

Of the respondents who indicated they were interested in distance education training, 19 (36.7%) said they were interested.

and one did not have the equipment necessary for distance courses did not find them to distance education disappointing. The respondents who indicated they were interested in distance courses were asked if they would like to receive formal training in distance education. If one were offered, 16 respondents indicated that they would be interested. 3 respondents indicated they were not interested in receiving distance education training. 17 respondents indicated they were interested in receiving distance education training.

Findings

(DeLee, 1998).

Table 1: Student Perceptions of WebCT, AGED 440, Texas A&M University, Fall 2000 (n=89)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Contribution of WebCT to student success</th>
<th>Student ability to access and track grades</th>
<th>Student reaction to accessing and tracking grades online</th>
<th>Student ability to use online course material</th>
<th>Overall student perception of WebCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>Negative</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>Total</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
</tbody>
</table>

- Overall student perception of WebCT
- Positive: 79 69
- Neutral: 3 3
- Negative: 8 8

Lindner and Murphy: Student Perceptions of WebCT in a Web-Supported Instructional Environment.
dialogue/interaction between instructor and student than they did before. It might also be assumed that faculty would have specific perceptions about ways in which training should be conducted in order to maximize their time and make best use of the resources available to them. Given the above, the purpose of this descriptive study was to assess the perceived distance education training and development needs of faculty members at a land-grant university engaged in a distance education program that has evolved to include both synchronous and asynchronous course delivery technologies. The primary objective was to describe respondents' perceptions as to the components, process and benefits/issues they associated with distance education training and development.

Methodology

The population for the study consisted of all teaching, research, and extension faculty in the University of Florida's (UF) College of Agricultural and Life Sciences interested in distance education training. In 1998, the university's agricultural distance education program, which has been in existence since the early 1990s, initiated an interactive two-way audio and video videoconferencing network composed of ten sites throughout Florida. Nine sites are located at agricultural research centers, and one is housed in the Institute of Food and Agricultural Sciences Communication Services facilities on the UF campus in Gainesville. Currently, in addition to video-conferencing, instructors also have the opportunity to use a variety of other interactive media for their courses, including on-line Web-based applications such as discussion forums, bulletin boards, chat, and multimedia.

To conduct the study, a 24-item survey, based on a thorough review of the literature, was developed and sent electronically to a convenience sample of faculty who subscribed to the college's faculty listserv. The survey, which included a series of ranked choice items and several open-ended questions, had been reviewed by a panel of faculty experts in an agricultural education and communication department for face and content validity prior to distribution. A follow-up reminder to respondents was completed one week after the survey was distributed via the listserv. Due to the nature of the study, procedures to control for non-response error were not considered to be a factor, based on the reasoning that those faculty

Acrobat portable document format (PDF). PowerPoint™ handouts were available for printing with three slides per page. Additional course readings were also made available in PDF format.

Objective 3

Most students (92%) were able to access and track their grades on-line using WebCT. Eight percent did not access and track grades on-line. Of those who had accessed and tracked their grades, 83% indicated they had a positive experience in doing so. Twelve percent were neutral about tracking their grades, and 5% indicated the experience was negative. An example comment from one of the students who indicated a positive experience was "Yes, I do track my grades on WebCT, and I really like this aspect of WebCT. I feel this in the future can lead to less work for the professors, and a quicker response on grade distribution." In general, students who did not access and track grades and progress on-line indicated doing so was a poor use of their time because grades were available in the lab sections and they had limited access to computers.

Objective 4

Even though student photos and contact information were made available, 82% of the participants did not use WebCT's E-mail, threaded discussion, and study guide features to create an on-line learning environment to increase their ability to accomplish measured course objectives. An example negative student comment was "No, there are not enough users yet to develop a substantial network; however, I believe it will be utilized in this manner in the near future." Another student noted, "I have not used this on-line service as of yet. I have been able to read messages from my professors, which is really nice. I have not used any of the other services because I feel that I have not needed to at this time. Although, if I need to, I know I will have this available to me." Several students indicated limited access to an on-line computer contributed to their not using WebCT's on-line learning environment features. Seventeen percent of the respondents used the features mentioned above to create on-line learning environments. Students indicated three major reasons for using WebCT's on-line learning environment functions: communication between students and with professors; access to course notes and handouts; and access to on-line test reviews and study guides.
An example positive student comment was, "It helped me meet people, as well as learn about people. E-mails have helped out too." Another student noted that they used the online learning environment functions "because [they] study better with one other person and it is easier to get together on the Net to find that help." One student provided a neutral response.

**Objective 5**

Overall, most students (89%) had positive perceptions regarding the use of WebCT in AGED 440: Principles of Technological Change. One student who had a positive overall experience with WebCT noted, "I feel WebCT has been helpful and feel every course should use it." Eleven percent of participants had either negative or neutral perceptions regarding its use. Students who had negative or neutral overall perceptions towards WebCT indicated that difficulties logging in and using it led to frustration and ineffectiveness. Access to computers and printers and slow data transfer rates contributed to students' negative and neutral perceptions. Several students stated that unlike computers, books do not "crash" in the middle of the night or right before a quiz.

**Conclusion, Discussion, and Implications**

As noted earlier, the results of this study are not generalizable to students other than those who took AGED 440 during the fall semester, 2000. Replication of this study with other classes and in other settings would strengthen the generalizability of findings. These findings, however, provide information and insights about on-campus student perceptions, with respect to Web-supported courses, that administrators and instructors should consider when incorporating distance education technologies into traditional classes.

In a Web-supported instructional environment, students in this study perceived that WebCT contributed to their ability to accomplish the measured objectives of the course. This perception, however, was diminished when students did not have easy access to reliable computers with high-speed connections to the Internet. This finding is consistent with Freeman's (2000) conclusion that poor accessibility to computers and the Internet negatively affected students' ability to participate in courses that used WebCT. Teachers can enhance students' perceived ability to accomplish the measured impact of institutional faculty development efforts aimed at training agricultural faculty to develop and teach effective distance education courses.

**Conceptual Framework**

Research has shown that there are a variety of perceptual and attitudinal factors that are involved in a faculty member's decision to adopt new instructional technologies (Spotts, 1999). According to Rogers (1995), the technology adoption process is influenced by perceptions of the social system or environment, characteristics of the innovation itself and the communication channels used to disseminate information about it. With respect to faculty training, Carl (1986) makes the point that it is not enough to provide a technological innovation to faculty and then turn them loose to figure out how to best use it.

The National Education Association (2000) stated that training and assistance is one of the benchmarks necessary for faculty to succeed in a distance education environment. However, as a cautionary note, Spotts (1999) indicated that if instructors are expected to use instructional technologies—including distance education technologies—they need both intrinsic and extrinsic motivations to do so, such as technical support, training support, time to implement what they learn, and recognition by the academic community and in the promotion/tenure process.

With respect to agriculture, Miller and Carr's 1997 needs assessment of academic deans and selected faculty in institutions interested in distance education training opportunities for agricultural faculty indicated that agricultural faculty were most interested in "teaching techniques, models of effective teaching, principles of teaching and designing instruction for credit courses" (p. 7). Surveyed faculty were least interested in learning about distance education hardware and software; planning, managing, and evaluating distance education programs; and site coordination and administration issues.

**Purpose and Objectives**

From the perspective of current faculty perceptions of their distance education training and development needs, it could be argued that current faculty might place more emphasis on training in Web-based on-line technology designed to facilitate
technology use, and software use. They indicated that the most important skills for them to learn right now were Web editing/development and Web course tools. Concerns voiced most often were lack of time, lack of resources, and a need for ways to motivate faculty to take training and to teach distance education courses.

Introduction

The rapid growth of distance learning technologies designed to deliver academic programs has had a major influence on most facets of higher education over the past decade (Rahm & Reed, 1998; Trachtenberg, 1993). Certainly students and institutional administrators have been affected by the growth of distance education technology; however, it could be argued that faculty instructors may be the group that has been most impacted, in terms of substantive change in traditional roles, responsibilities, and experiences.

Although there has been a great deal of research directed at the distance education teaching and learning experience itself, less effort has been targeted at the process through which faculty instructors prepare themselves to teach in a mediated environment. Indeed, faculty training and development is a long-standing issue, and one that, although it transcends distance learning, has become more critical due to the rapidly evolving nature of distance delivery technologies.

Discussing ways in which to improve teaching in higher education, Dunkin (1986) called for more research on “teaching skills” in higher education, focusing on the efforts of faculty development agents. In 1995, Murphy and Terry pointed out that although the sender of information is a critical factor in the communications model, in distance education research, the “sender” (i.e., the faculty instructor), has been largely neglected. Miller and Carr (1997) argued that due to the unique characteristics of distance learning, professional development of faculty to teach at a distance was an important challenge of higher education in agriculture. Since that time, however, the evolution of new education technologies, including on-line distance education, combined with the growth and expansion of distance education programs at agricultural institutions of higher learning, has made it even more important to assess the objectives of a WebCT-supported course by helping students access publicly available and reliable computer resources. In addition, teachers should provide minimum recommended system specifications for students considering enrollment in a Web-supported course, so that students can make informed decisions about whether or not to enroll.

Although course materials were available on-line, students in this study tended to prefer traditional print material to WebCT-delivered course materials. Students wanted to have a hard copy of course materials, and very few relied solely on computer-based files. The cost to purchase course materials from a “copy” store is comparable to printing costs at computer labs and is less labor-intensive for students. Teachers should not assume that students are willing or able to receive course materials exclusively from on-line sources and should make materials available through a variety of channels. As more teachers make course materials available on-line, additional inquiry is needed to assess the advantages and disadvantages of such practices.

WebCT’s capabilities for accessing grades and progress were used by students more than any other feature. Students were able to access grades anytime. Further, grades were posted to WebCT immediately after scoring. Students did not have to come to the office or wait until the next class meeting to read grades posted on a bulletin board. These results indicate that teachers should use the grading functions of WebCT to provide students with more timely feedback.

The students in this study did not or were not able to take advantage of WebCT’s capabilities to enhance their learning by creating student-centered on-line learning environments. According to Donaldson and Thomson (1999), Web course tools can enhance student learning and facilitate communication among students and between students and teachers. The fact that the students were located on-campus, and could interact in person, may have affected the results presented in this study. Other factors that may have contributed to negative student perceptions and adoption of this feature of WebCT include newness of the technology, early adopter problems, limited instruction in the use of WebCT, and lack of ongoing support. Students, further, may have perceived WebCT as merely a conduit through which course instruction and information were delivered because no graded activities in the
course were dependent on student use of WebCT. Donaldson and Thomson (1999) noted that when students perceived Web course tools as being merely a conduit, they were less likely to react positively to the technology. In an effort to increase student satisfaction with WebCT's on-line learning environment functions, teachers should consider using multiple learning activities and graded assignments that require students to interact on-line.

Teachers should also consider the need to provide an adequate amount of instruction and support to facilitate student proficiency with WebCT. Research is needed to explore the relationship between student adoption of WebCT and the amount of training and support provided. It is possible that the students in this study may have taken more advantage of WebCT's on-line learning environment functions if they had received additional instruction and support.

Additional research is needed to explore the relationship between student achievement, or the ability to accomplish the measured objectives of a course, and the use of Web course tools. For example, do students in classes supported with Web course tools perform better on measures of acquiring knowledge than students in classes not supported by Web course tools?

This study found that students' overall perceptions of the use of WebCT in a Web-supported course were positive. Students' positive response to WebCT is good news for teachers who are incorporating or wish to incorporate educational technology into their teaching. Instructors, however, need to recognize that not all students are willing or able to use WebCT and may need to make alternative options or support mechanisms available for them. Additional research on Web-based instructional delivery methods is needed to understand better optimal methods for delivering instruction. As WebCT and other on-line course tools become more commonplace, and as students become more familiar with the technology, it is expected that student learning, teacher effectiveness, and course efficiencies will improve.

Keywords
Distance education, delivery strategies, instructional technologies

Planning for the Next Wave: Assessing Current Faculty Distance Education Training and Development Needs

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Abstract
As part of a strategic effort to enhance support services for faculty engaged in distance education, a descriptive study was conducted to assess the perceived distance education training and development needs of faculty members at a southern region land-grant university. Results of the study indicated that those who responded felt distance education training should be conducted in a traditional format, such as a prescribed course or set of training materials, and that the best format would be self-paced training or a combination of formal, informal, and self-paced training. Respondents were almost evenly split on whether training should be mandatory or voluntary for faculty teaching distance education courses. Faculty respondents in this study, in almost equal measure, felt that training content should cover instructional design,

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