

The Impact of Technology on Teaching and Learning

A survey of faculty and students at MTSU verified the importance of instructional technology in teaching and learning while pointing out areas for further development

By **Lucinda Lea, Maria Clayton, Barbara Draude, and Sarah Barlow**

Middle Tennessee State University (MTSU) in Murfreesboro, Tennessee, serves a diverse population of full- and part-time, traditional and nontraditional students. In the 2000–2001 academic year, 19,121 students enrolled in 6 undergraduate colleges and 35 graduate studies areas.

MTSU's administration promotes instructional technology as a crucial part of higher education for faculty and students. The Office of Information Technology (OIT) embarked on a survey of MTSU faculty in spring 1998 and of students in spring 1999, to assess the impact of technology on teaching and learning. However, because of ongoing innovations and wider availability of new technology, a strong possibility existed that the findings of these surveys had become outdated in two years. Therefore, in fall

2000 and spring 2001, follow-up surveys targeted the same populations.

The Questionnaires

The 10-to-15-minute questionnaires consisted of four parts focusing on each population's general perceptions and opinions about instructional technology, the frequency of use, projected use, and demographics. While faculty at large were polled, only undergraduate students taking courses in technology-based classrooms whose faculty agreed to participate in the study received the questionnaire.

The Initial Studies

Results of the initial surveys showed that the overwhelming majority of MTSU faculty and students believe in the value of instructional technology. Five major findings emerged from the faculty survey, which were used to help MTSU faculty and administrators better understand the state of instructional technology on campus and identify the resources needed to ensure its future:

1. Faculty believe that instructional technology is essential.
2. Faculty have various needs relating to instructional technology.
3. Instructional technology is widely used across campus.
4. Different instructional technologies accommodate different teaching practices.

5. Faculty use of instructional technology will continue to increase.

The results of the initial student survey yielded similar findings:

1. The use of instructional technology positively affects student learning.
2. The use of instructional technology increases student interest and satisfaction.
3. Faculty's role and their ability to use instructional technology are major factors.
4. Certain instructional technology techniques better facilitate certain learning activities.
5. Instructional technology is an integral part of today's learning environment.

The Follow-up Studies

The follow-up studies applied the same principles as the original studies and targeted the same goals. Even the same method of administering the questionnaires to the faculty and students was used. The format of the questionnaires stayed the same, but some questions were modified and a few added to reflect the increased growth of Web-based learning opportunities.

The results of the follow-up faculty survey echo the major findings of initial survey, with faculty reporting that instructional technology is essential. Additionally, faculty continue to feel that

- their office equipment is adequate,

Middle Tennessee State University in Murfreesboro, Tennessee, hosted the Sixth Annual Mid-South Instructional Technology Conference from April 8–10, 2001. The conference theme was Teaching and Learning: Today's Successes/Tomorrow's Horizons. Both of the research projects described in this issue of *EDUCAUSE Quarterly* were presented at this conference.

- technology-based classrooms are important, and
- Web-based training enhances student learning.

However, faculty report a need for

- more time to develop and adapt course materials for use with instructional technology,
- a more positive effect on tenure and promotion as a result of integrating instructional technology, and
- more training.

The results of the follow-up student survey again showed highly positive student attitudes toward instructional technology's effect on student learning, interest, and satisfaction. In addition, they now perceive instructional technology as an expected part of today's learning environment. However, the ability of faculty to use technology as an effective teaching tool

remains an issue for some students. They express concerns about faculty who lack the proper skills to use — or who misuse — the technology.

Results

The new studies, especially when compared to the earlier surveys, yielded some interesting and encouraging results. As with the initial surveys, they show a highly positive trend in the perception of instructional technology's value. This seems to demonstrate the university's progress in disseminating information, training faculty, and supporting faculty in the use of instructional technology. More importantly, it indicates unabated interest in and readiness for implementing instructional technology. On the other hand, some student comments point

out weaknesses in the pedagogical application of instructional technology, expressing concerns over faculty competence with and, in some cases, effective use of instructional technology. This information will help OIT redirect its faculty training from technical competency to effective technology integration.

Complete results from the initial and follow-up studies (questionnaires and reports) appear at <http://www.mtsu.edu/~itsurvey>. *e*

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Faculty Attitudes about Distance Learning

A study of distance learning in Kentucky's higher education system revealed faculty willing to use the technology but needing more institutional support

By **Carol Wilson**

A case study conducted to investigate distance learning in Kentucky's higher education system focused on four phenomena:

1. the policy context for DL,
2. attitudes about faculty DL issues,
3. faculty proficiency in instructional technology skills, and
4. institutional barriers and support for DL.

Data came from three sources: mining of documents, a faculty-development needs assessment survey distributed to 1,500 faculty members at the 9 Kentucky institutions of higher education, and interviews conducted with more than 60 administrators and faculty members.

Background

Institutions of higher education in Kentucky face pressure to offer distance education programs in response to the Kentucky Virtual University (KYVU), created with the passage of the Kentucky Postsecondary Improvement Act of 1997. State institutions became responsible for supplying courses to the KYVU, plus training and rewarding faculty engaged in distance education. However, the faculty responsible for developing and delivering the courses were hypothesized to be unwilling, unprepared, unrewarded, and unsupported by the university infrastructure. The study described

here was to provide a snapshot of the state of distance learning in the Commonwealth of Kentucky.

Methodology

Given the guiding principles and ongoing recommendations of the Faculty Development Work Group of the Council of Postsecondary Education, a needs-assessment instrument was developed, refined, field tested, and pilot tested. The survey contained more than 100 five-point, Likert-type scale questions and an open-ended question where respondents entered additional comments about instructional technology, distance education, or their needs.

The population for the survey

included all full-time faculty members at the nine Kentucky state-supported institutes of higher education ($N = 7,173$). The nine institutions include two doctorate-granting institutions, five regional universities, one historically Black college, and the community college and technical school system. Statewide data analysis drew from a stratified, random sample ($n = 1,500$) of full-time, instructional faculty members at the nine Kentucky state-supported institutes of higher education. The return of 687 surveys gave a response rate of 46 percent.

Two different interview formats were employed: semistructured telephone interviews with individuals, and focus group interviews with sets of distance education instructors and administrators. The individuals selected for the telephone interviews represented the various levels at which distance education policy and practice were defined. Personal interviews were conducted with 4 state policy makers, 11 administrators from all levels of the institutes of higher education, and 14 faculty members. An additional 33 faculty members and administrators participated in three focus groups on "Faculty Issues in Distance Learning."

Results

This study found that the Kentucky faculty were

- unsure of the instructional efficacy of DL,
- unconvinced about personal involvement in DL,
- prepared in most of the International Society for Technology Education (ISTE) technology performance standards for teachers,
- underprepared in areas related to online instruction,
- motivated to use instructional technology to improve student learning,
- under time pressure,
- unrewarded for their work with instructional technology, and
- feeling undersupported by the university infrastructure.

The results, although not statistically significant at the 0.05 level, highlight important patterns.

The respondents had a positive attitude toward distance education as a general concept ($mean = 3.53$; $standard\ deviation = 1.06$), but were less enthusiastic about personal involvement ($m = 3.02$, $sd = 1.13$). Responders disagreed with the following statement: DE will provide quality instruction ($m = 2.89$, $sd = 1.01$). In rating the most effective mode of instruction for faculty development, respondents selected various forms of one-on-one instruction as most effective, followed by face-to-face classroom instruction. They ranked online instruction as the least effective mode of instruction. Respondents having no prior experience with distance

The faculty tended to be intrinsically motivated to participate in DE, especially to facilitate student learning. Financial incentives received the lowest rankings as motivators.

education had little interest ($m = 2.43$, $sd = 1.60$) in teaching a DE course, while those with DE experience showed only mild interest ($m = 3.29$, $sd = 1.61$).

The respondents were at least moderately comfortable with most of the ISTE technology performance standards for all teachers and felt that using a computer wasn't a barrier to instructional technology. They indicated comfort ($m > 4$) with operating a computer and peripherals and using wordprocessing, e-mail, and the Internet. They felt moderately comfortable (m between 3 and 4) with installing software, using a spreadsheet, and using a presentation tool. They were uncomfortable ($m < 3$) with any of the instructional techniques associated with instructional technology or distance education, such as modifying an existing course for distance learning delivery or developing effective online activities.

The faculty rated intrinsic factors consistently higher (m between 3.64 and 3.17) than extrinsic factors (m between 2.80 and 2.46). The faculty tended to be intrinsically motivated to participate in DE, especially to facilitate student learning. Financial incentives received the lowest rankings as motivators.

Although valued, technology use isn't rewarded in yearly reviews or promotion and tenure decisions. Instructional technology is moderately valued (m between 3.13 and 3.55) by the respondents' colleagues, department heads or chairs, and upper administrators. Faculty perceive that upper administrators value instructional technology more than those at the departmental level, such as their heads or chairs and their colleagues. This is important because faculty reward and compensation is primarily determined at the departmental level. Technology use reportedly has little value ($m < 2$) for determining reward and compensation. The question "How was technology use valued for tenure/promotion review purposes in teaching at your institution during the past two years?" yielded a 47 percent response rate of "do not know" and 28 percent of "not valued."

Respondents ranked time as the primary barrier to using instructional technology. This included time to prepare course materials ($m = 3.88$, $sd = 1.15$) and time to participate in technical training ($m = 3.67$, $sd = 1.25$). Respondents also rated lack of support and lack of hardware and software as barriers to their use of instructional technology. At least one third of all respondents expressed dissatisfaction with technology for teaching, technical computer support, and instructional design support at their institutions.

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