Land Grant University Faculties' Perceptions of Teaching Skills and Educational Technologies

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Abstract

Faculty members with teaching appointments in the College of Agriculture and Life Sciences (CALS) and the College of Education (COE) at Mississippi State University were studied to determine their perceived levels of skill and interest to learn more about selected educational technologies and teaching methods. The study was conducted as part of a United States Department of Agriculture Challenge Grant in conjunction with the University of Arkansas. To expand upon the study by Wardlow and Johnson (1999), Mississippi State University faculty from the College of Education were studied and compared to faculty from the College of Agriculture and Life Science. As expected, faculty rated themselves higher in the traditional methods of instruction than they did in the new and emerging educational technologies. However, a strong level of interest was apparent in their desire to learn more about educational technologies. Differences were noted between COE and CALS faculty in several areas, most notably in "student centered activities." Also noted were similarities between the two faculties in the areas of "developing a teaching portfolio," and "case studies." A positive correlation was found between the variable "have received formal instruction in pedagogy" and the interest to learn more about "interactive technology based instruction." However, COE and CALS faculty members reported being discouraged from learning more about educational technologies because of a lack of administrative support and/or equipment. Respondents opined that "research facilitates advancement" and is looked upon more favorably by university administrators. Compounding the problem is that most faculty members have not received formal training in the use of educational technologies in the classroom.

Introduction

"Access to information technology (IT) and the Internet and the ability to use this technology effectively are becoming increasingly important to full participation in America's economic, political and social life. While computer and Internet access has exploded in recent years, America faces a 'digital divide'-- a gap between those who have access to Information Age tools and the skills to use them and those who don't" (Clinton, 2000, Online). On April 4, 2000, President Clinton issued a National Call to Action for turning the digital divide into a digital opportunity. Clinton established an initiative whereby technology is being used to bring people together, for the sake of using IT to help make the American dream a reality for more people, regardless of race, income, education level, geography, or disability. Clinton's initiative is based on two goals: 21st century learning tools for every child in every school, and digital opportunity for every American family and community.

A plan for achieving the first goal has been implemented. The idea is that for children to succeed in life, they need to master basic IT skills at an early age. A critical element in this supposition is for an assumed level of knowledge regarding IT literacy. To achieve this IT knowledge level, focus is being placed on a comprehensive approach to integrating technology into teaching and learning while recognizing that—as powerful as technology is—it is no substitute for an inspiring teacher or a loving parent (Clinton, 2000). One measure for achieving Clinton's first digital divide goal is to "ensure that teachers are technologically literate and can integrate technology into the curriculum." How can the American public be assured that teachers, both current and future, have received an appropriate training in IT at the university level? What is the current level of IT skills for college of agriculture faculty? What is the current level of IT skills for college of education faculty?

The development and use of IT is certain to bring about change in education. Moore and Thompson (1990) found that many states were in the process of installing telecommunications technology to allow distance education to occur in all levels of education, cradle to grave (Murphy & Terry, 1998). The use of educational technologies such as computers and telecommunications offers great potential for improving the delivery of already high quality instructional programs (McCaslin & Torres, 1992; Day, Raven, & Newman, 1998). As noted in other land grant university studies (Kirby, Waldvogel, & Overton, 1998; Wardlow & Johnson, 1999), university faculty had much interest in learning about current educational technologies such as using multimedia, constructing web pages, and incorporating computer-aided materials into their curricula. These studies, and Clinton's National Call to Action, assumed that interest in IT alone could transform teachers into IT teachers at all levels. If this is true, then what variables might be associated with university faculties' IT use in the classroom? Does IT create enough interest among faculty to learn more about it?

Teaching skills and/or the interest to improve those skills among university faculty has enjoyed a renewed interest in the public eye over the past five years. Wiedmer (1994, cited in Wardlow & Johnson, 1999) found that 96% of the students from 17 universities believed that teaching was the most important job of the professor, followed by service, then research. While some might argue the merit of this finding, all believers of the land grant university model will agree that teaching, research, and service are the cornerstones of a highly successful educational model. Land grant faculties vary in number and specialization, just as they do in their preparation for "teaching" at the university level. While faculty in Colleges of Education have experienced a formalized education in pedagogy prior to their collective university-level teaching duties, the same cannot be said of all faculty members in most Colleges of Agriculture. Does the presence of formal pedagogical training influence faculty members' perceived levels of teaching skill and/or skill in using educational technologies?

A 1999 report from the U. S. Department of Education (CEO Forum, 2000) found that only 24% of new teachers felt "very well prepared" to integrate technology into their curriculum. How do we ensure Americans that future public school teachers will be IT literate? One method of addressing this concern is to conduct a needs assessment of land grant faculties' teaching skills and interests in improving their teaching techniques. Also, to address President Clinton's National Call to Action, a study of teacher educators' IT skill levels and interests must be ascertained.

Purpose and Objectives

The purpose was to determine College of Agriculture and Life Sciences (CALS) and College of Education (COE) faculty members' perceived levels of teaching skill and educational technology use, and their interest levels for improving those skills. The study focused on teaching methodology and techniques along with the implementation and use of technology in the classroom. This study was conducted as part of a USDA Challenge Grant in association with the University of Arkansas. This study was guided by the following research questions:

1. What are faculty members' perceived levels of teaching skill, and are there differences in the perceived levels between CALS and COE faculty?
2. What are faculty members' levels of interest for learning more about teaching activities, and are there differences in those levels between CALS and COE faculty?
3. What are faculty members' perceived levels of skill in using education technologies, and are there differences in the perceived levels between CALS and COE faculty?
4. What are faculty members' levels of interest for learning more about educational technologies, and are there differences in those levels between CALS and COE faculty?
5. What is the relationship between faculty members' perceived levels of skill and interest in learning more about both teaching activities and educational technologies?
6. What are the relationships between the faculty members' level of interest in learning more about teaching activities and technologies and their related demographics, such as the existence of having received formalized instruction in pedagogy?

Procedures

A census study was conducted of CALS and COE teaching faculty at Mississippi State University. A list of all current CALS and COE faculty members was obtained from each respective dean's office. Individuals were selected for the survey on the basis of having taught at least one course within the previous two years. A total of 181 faculty members were identified and included in the study.

Following survey research guidelines, completed surveys were returned from 118 faculty members (COE=48, CALS=70) after three instrument mailings (plus two additional reminder mailings between each instrument mailing) for an overall response rate of 65.19%. Responses were received from all departments in both colleges. In an attempt to control the non-respondent error, a double-dip random sample of 20% (n=13) of the non-respondents was taken and telephonic data collection occurred using the research instrument as an interview guide (Miller & Smith, 1983). Results from the double-dip sample were compared to the respondent sample. No statistical differences were found, thus the findings may be generalized to the entire population of CALS and COE teaching faculty at Mississippi State University.

Data were collected using a survey instrument based on the work of Wardlow and Johnson (1999), which contained two specific categories: **teaching activities** (20 items) and **educational technologies** (12 items). These two categories were split between three instrument sections: common teaching methods and techniques, teaching technologies, and general teaching

factors. The instrument also included five questions pertaining to the respondents' teaching appointment and experience.

Section I required the respondents to rate their "current level of skill" (Excellent, Good, Fair, Poor) and "level of interest to learn more" (High, Moderate, Low, None) for nine specific teaching methods such as lecture, demonstration, case studies, etc. The second section asked respondents to use the same scales in rating their skill and interest levels for teaching technologies such as digital cameras, videoconferencing, Internet course web pages, etc. Section III allowed respondents to use the same scales mentioned above to rate their skill and interest levels for general teaching factors such as preparing course syllabi, encouraging critical thinking, faculty peer observations, etc. Section III contained items for both categories, teaching activities and educational technologies, which were combined with the items found in Sections II and I. The instrument had been reviewed for construct validity previously and received a coefficient of stability of $r = .68$ (Wardlow & Johnson, 1999). For this research study, the instrument was tested and revealed an overall coefficient alpha of reliability estimate of .94.

Descriptive statistics and bivariate analyses were used to describe the data. Relationships were explored using Spearman's correlation coefficients. Davis' (1971) convention was used to describe the magnitude of relationships.

Findings

Analyses of the data showed a mean of 13.7 years of university teaching experience for all subjects (Table1). The teaching appointment mean was 51.14% time with 5.63 graduate hours taught per year and 7.97 undergraduate hours taught per year. Graduate class size was 15 students per course, while undergraduate courses averaged 25 students per class.

Table 1.
Respondents' Teaching-Related Demographic Characteristics (N=181)

Characteristic	n	M	SD
Current FTE teaching assignment (% of time)	112	51.14	30.66
Number of years teaching at collegiate level	117	13.71	9.43
Number of graduate credit hours taught per year	103	5.63	6.15
Number of undergraduate credit hours taught per year	112	7.97	8.27
Average class size - Graduate courses	84	15.21	10.98
Average class size – Undergraduate courses	113	25.44	23.84

Question 1.

When asked to assess their current level of skill for 20 teaching activity items, no item was rated with an overall mean of "excellent" ($M \geq 3.50$). CALS and COE faculty members rated nineteen items as "good" ($M = 3.49$—2.50) and only one item, "Developing a teaching portfolio" had a mean score of "fair" (Table 2). Statistical differences were noted in 11 items, but only two real differences materialized on a practical basis. These differences were discovered in

"Motivating students/creating interest" and "Developing a teaching portfolio." COE faculty perceived their skills for motivating students as excellent, while CALS faculty perceived their skills for motivating students as good. For the second practical difference, COE faculty rated their skill levels as good compared to CALS faculty who considered their skill levels as fair in developing a teaching portfolio.

Table 2.
Respondents' Level of Skill in Teaching Activities (N=181)

	Grand (n=118)		COE (n=48)		CALS (n=70)		
Teaching Activity	M[a]	SD	M	SD	M	SD	F
Preparing course syllabi	3.35	.63	3.46	.65	3.27	.61	2.52
Lecture	3.33	.66	3.38	.71	3.29	.62	0.56
Demonstration	3.29	.65	3.43	.62	3.19	.65	3.98*
Hands-on exercises and activities	3.26	.73	3.46	.66	3.13	.75	5.79*
Preparing instructional materials	3.25	.68	3.27	.74	3.24	.65	0.05
Motivating students / creating interest	3.24	.66	3.50	.58	3.06	.66	14.15*
Designing / revising a course	3.23	.66	3.33	.66	3.16	.65	2.05
Preparing effective lesson plans	3.14	.74	3.33	.78	3.01	.69	5.45*
Discussion-based instruction	3.11	.68	3.43	.62	2.90	.65	19.33*
Hands-on problem-solving activities	3.06	.76	3.19	.77	2.97	.75	2.35
Encouraging critical thinking	3.06	.70	3.23	.66	2.94	.70	4.99*
Evaluating student learning	3.05	.68	3.15	.74	2.99	.63	1.60
Evaluating my teaching	2.92	.78	3.08	.74	2.80	.79	3.85*
Cooperative learning (group projects)	2.83	.81	3.17	.79	2.59	.74	16.34*
Improving student reading / writing	2.82	.82	2.94	.89	2.73	.75	1.75
Learning about alternative teaching methods	2.77	.76	2.91	.86	2.67	.68	2.84
Discovery learning activities	2.73	.80	3.02	.77	2.52	.75	11.55*
Case studies	2.67	.91	2.93	.84	2.49	.93	6.57*
Faculty peer observation	2.61	.84	2.76	.86	2.51	.82	2.30
Developing a teaching portfolio	2.46	.88	2.74	.91	2.28	.82	8.12*

[a] Excellent = 4, Good = 3, Fair = 2, Poor = 1
*p<.05

Question 2.

Respondents rated their perceived level of interest in learning more about the selected teaching activities (Table 3). As a group, COE and CALS faculty had at least a moderate interest ($\underline{M} \geq 2.50$) in learning more about all of the selected teaching activities (high = 4, moderate = 3, low = 2, none = 1). Statistical differences were noted in four of the items, but practical differences resulted for one item only. COE faculty had a moderate interest ($\underline{M} = 3.21$) in

learning more about "Developing a teaching portfolio" while CALS faculty had only a low level of interest (M = 2.38) to learn more about portfolios.

Table 3.
Respondents' Level of Interest to Learn More About Teaching Activities (N=181)

	Grand (n=118)		COE (n=48)		CALS (n=70)		
Teaching Activity	M[a]	SD	M	SD	M	SD	F
Encouraging critical thinking	3.28	.91	3.42	.90	3.19	.92	1.83
Motivating students / creating interest	3.25	.92	3.29	.87	3.23	.95	.13
Hands-on problem-solving activities	3.23	.90	3.35	.85	3.14	.93	1.41
Learning about alternative teaching methods	3.15	.93	3.29	.97	3.04	.89	2.03
Evaluating my teaching	3.15	.92	3.38	.89	3.00	.92	4.81*
Evaluating student learning	3.11	.90	3.25	.86	3.01	.92	1.96
Improving student reading / writing	3.10	.98	3.15	1.02	3.06	.95	.23
Hands-on exercises and activities	3.09	.87	3.18	.83	3.03	.90	.78
Demonstration	3.04	.92	3.21	.81	2.91	.98	3.03
Discovery learning activities	3.04	.94	3.20	.96	2.92	.92	2.28
Lecture	2.97	.97	3.04	.94	2.91	1.00	.49
Discussion-based instruction	2.97	.90	3.07	.91	2.90	.89	.94
Cooperative learning (group projects)	2.96	.92	3.11	.98	2.87	.87	1.89
Preparing instructional materials	2.91	.93	3.00	.99	2.86	.90	.66
Faculty peer observation	2.91	.92	3.18	.87	2.71	.91	7.13*
Case studies	2.88	.95	3.21	.83	2.68	.97	8.86*
Preparing effective lesson plans	2.83	.99	2.94	1.02	2.75	.96	.99
Designing / revising a course	2.82	.90	2.96	.92	2.72	.88	1.98
Developing a teaching portfolio	2.72	1.03	3.21	.98	2.38	.93	21.25*
Preparing course syllabi	2.59	.98	2.71	1.05	2.51	.92	1.21

[a] High = 4, Moderate = 3, Low = 2, None = 1
*p<.05

Question 3.

Respondents rated their perceived level of skill in using 12 different educational technologies (Table 4). As a group, COE and CALS faculty rated their skills as good (M = 2.75) to fair (M = 1.61), but only two items had a grand mean of 2.50 or higher. Two factors revealed statistical and practical differences. CALS faculty rated their skill levels as good (M = 2.91, 2.67 respectively) in the use of "Presentation Graphics (ex: PowerPoint)" and "Computer projection systems," while COE faculty rated their skill levels as fair (M = 2.49, 2.24 respectively) for these same educational technologies.

Table 4.
Respondents' Level of Skill in Using Educational Technologies (N=181)

	Grand (n=118)		COE (n=48)		CALS (n=70)		
Educational Technologies	M[a]	SD	M	SD	M	SD	F
Presentation graphics (ex: PowerPoint)	2.75	1.05	2.49	1.08	2.91	1.00	4.64*
Computer projection systems	2.50	1.00	2.24	.96	2.67	1.00	5.14*
Digital cameras (still cameras)	2.31	1.05	2.09	1.00	2.46	1.06	3.47
Interactive technology based instruction	2.28	.93	2.43	1.06	2.17	.82	2.07
Document or image scanners	2.25	1.07	2.13	1.01	2.33	1.11	.90
Computer multi-media materials	2.21	.95	2.13	.92	2.26	.97	.46
Digital video cameras	1.89	.96	1.80	.92	1.94	.99	.60
Internet course web pages	1.86	.93	1.70	.91	1.97	.93	2.40
Teaching via distance education	1.86	.89	2.00	1.02	1.76	.77	1.93
Videoconferencing technology	1.67	.83	1.78	.88	1.60	.81	1.24
Internet course discussion groups	1.64	.76	1.72	.77	1.59	.75	.92
Teaching via interactive video	1.61	.83	1.77	1.03	1.51	.66	2.75

[a] Excellent = 4, Good = 3, Fair = 2, Poor = 1
*p<.05

Question 4.

Table 5 illustrates respondents' level of interest to learn more about educational technologies. COE and CALS faculties were moderately interested in learning more about all educational technologies. All item means were contained within the narrow range of 2.83 to 3.43. Statistical differences were found in all educational technologies but one, "Internet course web pages." However, the only practical differences occurred in the items "Interactive technology based instruction" and "Computer multi-media materials." For both items, COE faculty members were highly interested in learning more about these educational technologies (M = 3.76, 3.50 respectively) while CALS faculty members were only moderately interested (M = 3.22, 3.06 respectively) in learning more about these same technologies.

Table 5.
Respondents' Level of Interest to Learn More About Educational Technologies (N=181)

	Grand (n=118)		COE (n=48)		CALS (n=70)		
Educational Technologies	M[a]	SD	M	SD	M	SD	F
Interactive technology based instruction	3.43	.83	3.76	.57	3.22	.91	12.61*
Internet course web pages	3.35	.85	3.52	.77	3.23	.89	3.30
Computer multi-media materials	3.23	.94	3.50	.86	3.06	.95	6.40*
Computer projection systems	3.17	.90	3.48	.72	2.96	.95	10.07*
Digital video cameras	3.11	.98	3.40	.91	2.93	.99	6.58*
Digital cameras (still cameras)	3.09	1.00	3.33	.92	2.93	1.02	4.56*
Presentation graphics (ex: PowerPoint)	3.04	.99	3.38	.89	2.81	1.00	9.63*
Document or image scanners	3.03	.96	3.33	.87	2.83	.97	7.95*
Videoconferencing technology	2.96	1.00	3.35	.79	2.70	1.05	12.87*
Internet course discussion groups	2.91	1.00	3.15	.92	2.74	1.02	4.82*
Teaching via interactive video	2.89	1.04	3.15	.97	2.71	1.07	5.03*
Teaching via distance education	2.83	1.03	3.06	.96	2.68	1.06	4.00*

[a] High = 4, Moderate = 3, Low = 2, None = 1
*$p<.05$

Question 5.

Respondents' perceived levels of skill and levels of interest to learn more about teaching activities were correlated to determine if significant associations were evident for COE and CALS faculty members. Davis' conventions (1971) were used to describe the magnitude of the relationships. Two specific teaching activities, "Case studies" and "Developing a teaching portfolio," produced low positive relationships ($r = .20$ and .19 respectively); two more activities, "Designing/revising a course" and "Preparing effective lesson plans," produced low negative relationships ($r = -.24$ and -.23 respectively).

In similar fashion, respondents' perceived levels of skill and interest to learn more about educational technologies were correlated to determine if significant associations existed for COE and CALS faculty members. Two educational technologies, "Interactive technology based instruction" and "Videoconferencing technology," produced low positive relationships ($r = .19$ and .22 respectively); three more technologies, "Computer projection systems," "Presentation graphics," and "Document or image scanners," produced low negative relationships ($r = -.21$, -.24 and -.25 respectively).

Question 6.

Selected teaching-related demographics were correlated with the level of interest in learning more about teaching activities and educational technologies. Due to the nature of the data in this study, Spearman correlation coefficients were calculated for all items. Twenty-nine

significant relationships (both positive and negative) resulted in COE and CALS faculty members' desire to learn more about teaching activities and educational technologies and their teaching related demographics. For practical purposes, only the relationships of moderate magnitude were considered for further examination. A positive correlation ($\underline{r} = .30$) resulted between the variable "have received formal instruction in pedagogy" and interest to learn more about "Interactive technology based instruction."

Conclusions

Mississippi State University teaching faculty from the College of Agriculture and Life Sciences and the College of Education provided the responses for this study. The average amount of respondents' teaching experience was just under 14 years. COE and CALS faculty members devoted about 51% of their time annually to teaching eight credit hours of undergraduate instruction, and six credit hours of graduate instruction. It was interesting to note that while respondents were moderately interested in learning more about teaching activities and educational technologies, most were of the opinion that "research facilitates advancement" and is looked upon more favorably by university administrators. One respondent noted,

> *I care very much about my teaching and the quality of my teaching. I am frustrated by the "double speak" I hear from the upper administration. We get messages like we teach too much. Teaching doesn't matter; research and getting grant funding is what facilitates promotion. In the next breath we are filling out surveys such as this and documenting retention of students while being given poor facilities, poor equipment, and no budget.*

Teaching activities

Faculty members rated their perceived level of skill in 20 items relating to teaching activities. Overall, respondents from both colleges rated their skill levels in traditional teaching activities as "good." This was true also when comparing the two colleges independently. In terms of current skill level, teaching methods such as preparing syllabi, lecture, demonstration, and hands-on activities were consistently ranked near the top for each college. On the other hand, items such as developing a teaching portfolio, faculty peer observation, case studies, and discovery learning activities were consistently ranked near the bottom for both faculty groups. It is possible that these items reflect less traditional areas for educators who have been teaching for more than 10 years. These findings are in agreement with the results found by Wardlow and Johnson (1999) for College of Agriculture faculty at the University of Arkansas.

Both studies revealed faculty strengths in the traditional teaching methods, while underscoring the need to further develop newer teaching methodologies that provide for greater student participation in the learning process. If faculty members value the learning process and the relevance of student interaction in that process, then COE and CALS faculty members would be wise to further explore "student-centered" instructional methods. As noted by Somekh and Davis (1997), traditional classroom teaching methods have always created a dilemma for

conscientious instructors; what is possible for the group may not be ideal for the individual. It is unlikely that each student in the classroom has identical learning needs or preferred learning styles.

College of Education faculty members rated all teaching activity skill areas as good, and one area as excellent. COE faculty perceived their greatest skill was in motivating students and creating interest in the classroom. The converse shows their weakest skill area was in developing a teaching portfolio. College of Agriculture and Life Science faculty perceived their highest skill level was in using the lecture method. CALS faculty rated their skills as fair for developing a teaching portfolio. The results indicate that both faculty groups might want to request in-service workshops for developing a teaching portfolio, if this is a needed skill area for university faculty members. Further study might determine whether faculty members at many universities value the teaching portfolio as a realistic portrayal of an educator's skills and abilities.

When faculty rated their level of interest to learn more about teaching activities, one expected outcome occurred. The expected outcome was found in the highest rated item for skill level "Preparing course syllabi," which also received the lowest rated level of interest to learn more. COE and CALS faculty were only moderately interested in learning more about all 20 teaching activities. The upside was that CALS respondents were most interested in learning more about "Motivating students/creating interest," which demonstrates the need for engaging students in the learning process. Wardlow and Johnson (1999) found similar results for University of Arkansas faculty, with the exception that Mississippi State University faculty were not as interested in learning more about the lecture and demonstration methods, as was found in the Arkansas study.

Significant relationships, although low in magnitude, resulted in COE and CALS faculty members' skill levels and levels of interest to learn more about "Case studies" and "Developing a teaching portfolio." As respondents' skill levels changed (increase or decrease), so too did their desire to learn more about these two teaching methods. The converse held true for two additional teaching methods, "Designing/revising a course" and "Preparing effective lesson plans." As respondents' skill levels changed, their desire to learn more about these two items changed in the opposite direction.

Educational technologies

Respondents' level of skill in using educational technologies was considerably lower than their level of skill in teaching activities. Faculty members rated themselves most proficient in older technologies such as PowerPoint, projection systems, and still digital cameras. Newer and somewhat emerging technologies such as teaching via interactive video and Internet discussion groups resulted in the greatest deficiencies. As was found in the study by Wardlow and Johnson (1999), faculty from both universities had a high level of interest to learn more about all these technologies, not just the emerging technologies.

The highest rated item for desire to learn more about was the use of interactive technology based instruction. This result shows promise for promoting more student-centered instruction at the university level. Computer-assisted instruction can be designed to accommodate individual learner diversities by combining a mix of text and media, and can be accessed by learners

individually or in small groups. These materials are more student-centered than teacher-centered, and may better meet the learning needs of the individual (Brooks, 1997).

Again, a phenomenon occurred when respondents' rated their level of interest in learning more about educational technologies. A low level of interest was given for learning to teach via interactive video, even though respondents also rated this item as their weakest skill area. This result may indicate one of two possibilities; either respondents considered themselves unskilled in using interactive video and did not want to improve upon it, or the question may have been misleading to the respondents. Further study of university faculty members' skills on a longitudinal basis may provide clarity in understanding this phenomenon.

COE and CALS faculty members' desire to learn more about teaching activities and educational technologies were correlated with their teaching-related demographics. Individuals who had received formal training in pedagogy held a significantly stronger desire to learn more about "Interactive technology based instruction," than did respondents without formalized training in pedagogy. Although one might argue this is an expected result without consequence, these researchers believe it alone distinguishes the need for further study and professional development activities in the use of educational technologies. To dismiss this finding might promulgate the use of educational technologies in lieu of sound instructional design. All educators would be well advised to heed the warning of Bernstein (1998), who found that many computer-assisted instructional materials (CAI) are developed by technical professionals who have the critical technical skills necessary for successful implementation, but lack knowledge of educational principles. The resulting CAI are technology-driven rather than pedagogy-driven.

Respondents in this study were competent and reasonably proficient in all teaching activities. A concern may arise for the deficiencies found in the less traditional teaching methods. A real concern was found in the use of educational technologies. Most respondents have not had formal instruction in using these technologies, and have had to learn how to use them through "the seat of their pants" approach. While some instructional workshops in educational technologies are currently in place, many respondents noted, "Classes are to short to learn the ropes." Another concern expressed by most of the faculty is that university administrators do support integrating technology into the classroom, but "there is very little equipment available." Also, that "department heads do not favor faculty training," and any new innovative teaching strategies "have to be funded by faculty," not the department or the university.

Recommendations

Based upon the findings of this research, it is apparent that faculty are interested in the integration and use of information technology in the classroom. The problem arises from a lack of administrative support and/or equipment. Compounding this problem is most faculty members have not received formal training in the use of educational technologies. Although professional development workshops addressing these factors is in place and is widely attended by many COE and CALS faculty, respondents in this study were unaware of such services. Why is there a discrepancy in the knowledge base for IT services at Mississippi State University? What are the barriers to attending and maintaining a professional development program to learn more about current teaching methods and educational technologies?

Future workshops should be developed to address specific teaching methodologies and educational technology use in the classroom, especially distance learning activities. Specifically, faculty members are most interested in learning how to motivate students, encourage critical thinking, use interactive technology based instruction, develop Internet course web pages, and incorporate computer multimedia materials in the teaching and learning process.

The results of this study show that certain faculty members in the Colleges of Agriculture and Education at Mississippi State University have much to learn before they can answer Clinton's National Call to Action for turning the digital divide into a digital opportunity. To create knowledgeable, IT literate students, it is of the utmost importance that "inspiring teachers" and "inspiring teacher educators" become IT literate too.

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Land Grant University Faculties' Perceptions of Teaching Skills and Educational Technologies

A Critique

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Contribution and Significance of Research

This research with the faculties of the College of Agriculture and Life Sciences and the College of Education at Mississippi State University, along with similar and recent research conducted by Wardlow and Johnson with faculty of the College of Agriculture at the University of Arkansas, and with similar results for both institutions, strengthens the case for and illustrates the need to help faculty to learn to use, and thus become more comfortable with, both educational information technologies and selected teaching activities. The research makes a significant contribution to understanding better the self-perceived perceptions of educational technologies and teaching skills held by university faculty members.

Also, because interactive technology-based instruction will become more prevalent in the future, especially as more instruction is delivered in asynchronous modes, the finding that "individuals who had received formal training in pedagogy held a significantly stronger desire to learn more about 'interactive technology-based instruction' than did respondents without formalized training in pedagogy" indicates a need for in-service training of faculty without formal pedagogical preparation. This finding should be heeded by university administrators. The finding that faculty in both colleges rated their skills in developing teaching portfolios rather low, coupled with the increasing use of teaching portfolios in assessing people for tenure and promotion, indicates another area for in-service education.

The authors are to be commended as well for the way in which they determined perceived interests of the faculty with respect to level of interest in learning more about teaching activities and educational technologies. Consequently, opinions expressed about perceived levels of support and interest from administrators probably would not have surfaced in the way that they did. The resulting findings should be taken into consideration by university administrators when setting policy and program priorities.

Procedural Considerations

The research was designed well around a logically developed theoretical base and conducted in a sound manner. The researchers are to be commended in the way in which they handled the problem of non respondents.

Questions for Consideration

Besides the authors' conclusions drawn and recommendations made, should future researchers examine the degree to which computer-assisted instructional programs available to faculty, e.g., WebCT, are based on ease of use and sound educational principles, and, if necessary, make recommendations for improvement?