A Comparison of Student and Faculty Academic Technology Use Across Disciplines

Kevin R. Guidry

Allison BrckaLorenz

Indiana University-Bloomington

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Technology is often believed to be an enabler, a way of surpassing our natural limitations. In the classroom, technology is employed in the hopes that it will enable students to learn more effectively and teachers to teach more effectively. Although the empirical research is often mixed or contradictory with respect to the effectiveness of technology and the reasons for that effectiveness (Bernard et al., 2004; Sitzmann, Kraiger, Stewart, & Wisher, 2006; U. S. Department of Education, 2009), undergraduates expect faculty to use technology and use it well (Smith, Salaway, & Karuso, 2009).

Several complex ideas must be untangled to understand this phenomenon. First, we must unpack what kind and how often technologies are used by students and faculty. Second, we must understand their experiences in the contexts in which they live them. Arguably, one of the most pervasive of those contexts is the disciplinary structure that permeates American higher education. Finally, we must explore potential differences in how students and faculty – two very different populations who use academic technologies in very different contexts – view and use these technologies.

Literature Review

A growing body of research has linked student engagement – a proxy of student learning and involvement closely associated with the National Survey of Student Engagement (NSSE) and related surveys – with technology. Using data from the College Student Experiences Questionnaire (CSEQ), the predecessor to NSSE, Kuh and Hu (2001) found a positive relationship between a student's use of technologies and self-reported gains in science and technology, vocational preparation, and intellectual development. In another study, Hu and Kuh (2001) also found that students attending more "wired" institutions not only used computers more frequently but they also reported higher rates of engagement than students at other

institutions. Data from NSSE have repeatedly indicated that student use of information technology is not only strongly associated with measures of learning and engagement such as academic challenge, active and collaborative learning, and student-faculty interaction but also that students who more frequently use technology report greater gains in knowledge, skills, and personal growth (NSSE, 2003; NSSE, 2006; Chen, Lambert, & Guidry, 2010).

Despite the research that has linked technology with positive educational outcomes and learning, a number of researchers have argued convincingly for decades that any link between technology and learning is indirect at best. Clark, Yates, Early, and Moulton (2009) provide an excellent brief overview of these arguments while Clark (2001) provides an in-depth, book-length review. These arguments typically focus on the pedagogical changes that inevitably accompany the introduction of technology into the class or classroom, arguing that those changes are responsible for changes in learning and not the technologies themselves. The federal government's now-defunct Office of Technology Assessment summarized this argument neatly: "…it is becoming increasingly clear that technology, in and of itself, does not directly change teaching or learning. Rather, the critical element is how technology is incorporated into instruction" (1995, p. 57).

One possible explanation for the link between the use of technology and positive education outcomes is that use of technology is often linked to increased time-on-task. For example, a recent meta-analysis commissioned by the U. S. Department of Education (2009) examined the relationship between learning outcomes and online and hybrid courses. The authors concluded that both online and hybrid courses have a significant positive impact on learning outcomes, with hybrid courses having a greater impact. In sympathy with the arguments against a simple link between technology and education, the authors cautioned that

the "positive effects associated with blended learning should not be attributed to the media, per se" (p. ix). In fact, a close reading of their report shows that online and hybrid courses appear to require more time-on-task than offline courses, a potential explanation for their increased effectiveness. Indeed, NSSE data support this conclusion. In his 2004 analysis of students' online habits, NSSE researcher Thomas Nelson-Laird concluded that "student who devote most of their online time to academics are more likely to engage in other effective education practices" (abstract).

Another possible way to better understand the relationship between academic technologies and educational outcomes is to examine the different ways that student and faculty members in different academic disciplines use technology. In American higher education, academic disciplines and discipline-based departments are "the foundation of scholarly allegiance and political power, and the focal point for the definition of faculty as professionals" (Gappa, Austin, and Trice, 2007). Disciplinary affiliation shapes how faculty conceive of knowledge and how they teach (e.g. Prosser and Trigwell, 1999; Neumann, 2001), how they use technology in their teaching (e.g. Waggoner, 1994), and the impact of technology on their students (e.g. Kulik, Kulik, and Cohen, 1980).

This study extends the research into faculty and student use of contemporary academic technologies by asking five questions: First, how often do students report using academic technologies? Second, how often do faculty report using academic technologies? Third, do students in different disciplines use these technologies more or less than their peers? Fourth, do faculty in different disciplines use these technologies more or less than their peers? Finally, are there noticeable differences between how often students and faculty use these technologies?

Methodology

This study examines responses to a pair of surveys – the National Survey of Student Engagement (NSSE) and the Faculty Survey of Student Engagement (FSSE) – administered in the spring of 2009. Eighteen American colleges and universities participating in both surveys administered a matched set (student and faculty) of additional questions focused on academic technology and communication media; these additional questions are in Appendices A and B.

The 18 institutions that participated in both the student and faculty surveys are a diverse group of institutions. Eight are public institutions, eight are private non-profit institutions, and two are for-profit institutions. These institutions range from relatively small baccalaureate colleges through medium-sized Master's Colleges and Universities and Special Focus Institutions to large research universities; the average enrollment was 5300 students. And two of the institutions are Historically Black Colleges or Universities (HBCUs).

Only the 4,503 randomly-selected senior student respondents are included in this analysis. Unlike their classmates in their first-year of study, senior students not only have a declared major but likely have taken and are taking many classes in their discipline. Similarly, only the 747 faculty members who teach primarily upper-division courses or senior students were included as they more likely teach courses that more clearly demonstrate differences between disciplines. Most student respondents were enrolled full-time (76.7%), female (68.2%), and White (61.7%). Most faculty respondents were male (57.4%) and White (72.0%). Additional respondent characteristics are in Tables 1 and 2.

Further, this study only focuses on one ten-part question on the experimental instrument. For students, this question asked: "During the current school year, about how often did you use the following technology in your course?" Faculty were asked: "During the current school year, how often did you use the following technology in your courses?" Following this question was a

list of ten technologies with the response options: Never, Sometimes, Often, Very often, I do not know what this is. The full questions and response sets are in the appendices.

The specific technologies included:

a. Course management systems (WebCT, Blackboard, Desire2Learn, Sakai, etc.)
b. Student response systems (clickers, wireless learning calculator systems, etc.)
c. Online portfolios
d. Blogs
e. Collaborative editing software (Wikis, Google Docs, etc.)
f. Online student video projects (using YouTube, Google Video, etc.)
g. Video games, simulations, or virtual worlds (Ayiti, EleMental, Second Life, Civilization, etc.)
h. Online survey tools (SurveyMonkey, Zoomerang, etc.)
i. Videoconferencing or Internet phone chat (Skype, TeamSpeak, etc.)
j. Plagiarism detection tools (Turnitin, DOC Cop, etc.)

Beyond those described above, particularly the criteria used to select the participants, no controls were employed in these analyses. This study seeks to understand the student and faculty experiences without seeking to make predictions or describe causal relationships. Not only do the number of disciplines explored and number of faculty surveyed make it difficult to perform complex analyses (e.g. cell sizes quickly grow very small) but the researchers hope that this study will be readable and easily applied to practice by practitioners such as faculty developers and information technology professionals. Although the latent social, cultural, and economic causes are interesting and important, they are complex and beyond the scope of this study and its two brief surveys.

In addition to comparing means and identifying homogenous subgroups using Tukey's post-hoc test, cluster analysis was performed on both student and faculty responses. Cluster analysis is a statistical procedure that groups cases together based on similarities in specified variables. K-means clustering, the specific method of cluster analysis employed in this study, groups cases together based on their distance from a mean or center value of the specified variables. The cluster assignments and center values are iteratively modified by the clustering algorithm until clusters and center values are stable. In this instance, students and faculty members were grouped together based on their responses to these frequency-of-use questions. Although each cluster is described by its center values, the researchers must interpret those values and the meanings of the clusters (Aldenderfer & Blashfield, 1984; Norušis, 2010).

In this study, the researchers discovered after repeated trials that 4-means analysis yielded the most logical and useful clusters for students whereas 3-means analysis was most useful for faculty. More granular clusters may have been desirable but dividing respondents in eight disciplines into multiple clusters quickly yielded small cell sizes, reducing the researchers' ability to perform meaningful analysis and interpretation. The four student clusters grouped students into High use, Medium use, Low use, and No use of technology. Similarly, the faculty were grouped into High use, Low use, and No use. For both groups of respondents, all groups made frequent or some use of course management systems except for the No use groups.

Results

The first and second research questions asked how often students and faculty report using academic technologies. Of the ten technologies on this survey, students use only course management systems frequently with the average response being "often." The other technologies are used by some students but with low frequency and mixed variances with most

technologies being reported as used "never" more often than not. Faculty reported similar results with relatively frequent use of course management systems (CMS) but much lower use of the other technologies. Table 3 presents the responses of all senior students and upper-division-teaching faculty with responses converted to a 4-point scale (i.e. Very often = 4, Often = 3, Sometimes = 2, and Never = 1). For both students and faculty, most mean scores are relatively close to the lowest score of 1, indicating that student and faculty overall make virtually no use of those technologies.

Another way of describing the frequency with which students and faculty use these academic technologies is through cluster analysis. As described in the methodology section, students were clustered into four groups and faculty into three groups. The percentage of students and faculty in these clusters are shown in Tables 4 and 5, respectively. The plurality of students (48.2%) and majority of faculty (53.6%) are in the Low use clusters, indicating that the only technology they used is their CMS, an unsurprising finding given that only CMS has a mean above 2.0 (3.1 for students and 2.9 for faculty, both indicating that on average both students and faculty often used their CMS).

The third research question asked if students in different disciplines use these technologies more or less than their peers. Differences between disciplines become apparent once the responses are compared between students with different majors in Table 6; post-hoc analysis using Tukey's test (alpha < .05) identified multiple homogenous groups for each of the technologies. These homogenous groups seem to indicate that students in Professional, Business, and Education majors used these technologies significantly more than their peers in other disciplines, a finding supported by observing that only these 3 groups have more than 25% of their respondents in the High or Medium use clusters. In particular, it is worth noting that

Professional students make significantly more use of classroom response devices ("clickers") and Education students make significantly more use of e-portfolios than students in all other disciplines.

The fourth research question asked if faculty in different disciplines use these technologies more or less than their peers. Similar to the student respondents, differences are evident in the faculty responses although there are fewer differences (see Table 7). Examination of the homogenous groups indicate that faculty of all disciplines reported using blogs, collaborative editing software, and games with similar frequencies. For those technologies which faculty employed more in specific disciplines, similar patterns were obtained as for the student responses: Professional and Education faculty used many of these technologies more often than other faculty.

Faculty of all disciplines make uniformly low use of some technologies: blogs, collaborative editing tools, and games and simulations. The mean frequencies of use for these tools near "none" (1.0) for faculty in all disciplines. Moreover, the means for all disciplines are statistically identical at the $p < .05$ level of significance. In other words, the average frequencies of use of these three technologies are virtually indistinguishable across the disciplines.

The picture is more complex, however, when one examines the faculty clusters. Education faculty stand out as clear leaders in the use of technology. Although there are many faculty in the Arts and Humanities disciplines who are in the High use cluster, they are also the second largest group in the No use cluster, indicating a bifurcation where these faculty either used multiple technologies or none. Professional faculty, on the other hand, made relatively low use of each technology except for their CMS which nearly all of them used with some frequency.

The final research question asked if there are noticeable differences between how often students and faculty use these technologies. As indicated by the mean scores and their distribution among clusters, students indicated more frequent use of virtually all of these technologies than faculty. This remains true when one examines the significant differences between disciplines and when one compares the student and faculty clusters. The only exception is plagiarism detection tools, a technology in that faculty reported using slightly more than students.

Discussion

Students and faculty of all disciplines used their institution's CMS much more frequently than any other specific technology or tool. This is good news considering the ubiquity and expense of these systems. The consistency is also heartening when juxtaposed with students' professed desire for frequent and consistent use of CMSs in their courses (Smith, Salaway, & Karuso, 2009). However, that excitement may be dampened by remembering that some technologies – blogs, collaborative editing tools, and games and simulations – are uniformly unused by faculty in all disciplines.

Students reported more use of all technologies than faculty. This may be a simple difference in perception or an artifact of the methodology of this study but those explanations seem incomplete and unsatisfactory. It is more likely that students are using technologies more than faculty are requiring or expecting them to use them. For example, students in all disciplines reported using collaborative editing tools more often than faculty. Those tools may not be required by faculty but used by students out of class to collaborate and complete group assignments.

The consistently high frequency of technology use reported by students and faculty in the Professional, Business, and Education disciplines seems to reflect values of those professions, resources available to them, and the specific content of the survey instrument. For example, Education students and faculty both reported making more frequent use of e-portfolios than any other disciplines, a usage that can be understood given the very high importance placed on effective assessment of learning outcomes in education programs. It is also possible that some disciplines with greater access to financial resources simply have greater access to technologies. Finally, the technologies on the survey instrument may be more amenable to these interdisciplinary and applied groups of disciplines.

Limitations

The greatest limitation of this study is that these two surveys were administered to two different groups of participants in different contexts. Students respond to NSSE in the context of all of their classes taken in the semester or quarter during which the survey is administered (typically February through May). Faculty, on the other hand, respond either in the context of a typical student or class they have taught in the current school year, depending on the survey option selected by their institution. Directly comparing these responses, even with the careful selection employed in this study, presents some obvious limitations and challenges.

Additionally, the additional technology questions asked in the supplemental survey attached to NSSE and FSSE were not tested for reliability and validity nearly as heavily as the questions in the main NSSE and FSSE surveys. Although the researchers are confident in the face and construct validity of these questions, these questions remain new and relatively untested.

Finally, the participants in these surveys were not selected completely at random. At each institution, the student participants in NSSE were randomly selected or part of a census whereas each institution selected its own sampling strategy for faculty participants in FSSE. More importantly, the institutions invited to participate in this study were intentionally selected to maximize diversity among institutions and respondents. Institutions could choose to not administer these additional questions, potentially limiting the participants to those at institutions with a particular interest in technology.

Future Research

Future studies that employ more focused surveys and other methods of research may go beyond the descriptive findings of this study to explore relationships between disciplines and personal and institutional characteristics. Moreover, future studies employing different methods may be able to explore causation i.e. why particular disciplines use (or do not use) particular technologies. This is particularly important if we are to avoid idolizing or condemning disciplines simply for their use or non-use of academic technologies. Building off of the findings in this study that students appear to use technologies more than faculty require their use, future research should also focus on apparent differences between student and faculty uses and views of technology, particularly student use of technologies not assigned or required by faculty members. Finally, further research along the same lines as this study will always be necessary simply to explore the uses of new technologies as they become available and grow in popularity (e.g. microblogging, location-aware mobile technologies, and tablet computers).

Conclusion

Not only do students and faculty use technologies in different frequencies, students and faculty in different disciplines use different technologies in different frequencies. Hence a “one-

size-fits-all" approach to providing and supporting academic technologies is insufficient. Moreover, students and faculty have different expectations and use technologies in different contexts, differences that may create tension and misunderstandings between these two groups.

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Table 1

Student Characteristics

Characteristic		Number*	Percentage*
Enrollment Status	Full-time	3,455	76.7%
	Less than full-time	1,047	23.3%
Sex	Female	3,070	68.2%
	Male	1,431	31.8%
Race/Ethnicity	African American/Black	584	13.0%
	American Indian/Alaska Native	25	0.6%
	Asian/Pacific Islander	178	4.0%
	Caucasian/White	2,780	61.7%
	Hispanic	251	5.6%
	Other	75	1.7%
	Foreign	54	1.2%
	Multi-racial/ethnic	8	0.2%
	Unknown	131	2.9%
Age	Non-traditional (24 or older)	1,823	40.5%
	Traditional (less than 24)	2,645	58.7%
Major	Arts and Humanities	530	11.8%
	Biological Sciences	326	7.2%
	Business	867	19.3%
	Education	561	12.5%
	Engineering	210	4.7%
	Physical Science	155	3.4%
	Professional	514	11.4%
	Social Science	619	13.7%
	Other	653	14.5%
	Undecided	2	0.0%

* - Numbers may not total 4,503 students or 100% as all questions were optional.

Table 2

Faculty Characteristics

Characteristic		Number*	Percentage*
Academic Rank	Graduate Teaching Assistant	1	0.1%
	Lecturer	19	2.5%
	Instructor	58	7.8%
	Assistant Professor	199	26.6%
	Associate Professor	219	29.3%
	Professor	220	29.5%
	Other	20	2.7%
Sex	Female	302	40.4%
	Male	429	57.4%
Race/Ethnicity	American Indian or other Native American	2	0.3%
	Asian, Asian American or Pacific Islander	40	5.4%
	Black or African American	53	7.1%
	White (non-Hispanic)	538	72.0%
	Mexican or Mexican American	8	1.1%
	Puerto Rican	3	0.4%
	Other Hispanic or Latino	10	1.3%
	Multiracial	7	0.9%
	Other	10	1.3%
	Unknown	70	9.4%
Age	34 or younger	50	6.7%
	35-44	135	18.1%
	45-54	210	28.1%
	55 or older	309	41.4%
Discipline	Arts & Humanities	139	18.6%
	Biological science	48	6.4%
	Business	130	17.4%
	Education	70	9.4%
	Engineering	41	5.5%
	Physical science	45	6.0%
	Professional	69	9.2%
	Social science	128	17.1%

* - Numbers may not total 747 faculty members or 100% as all questions were optional.

Table 3

Responses

		N	Mean	Std. Deviation
Students	CMS	4,106	3.1	1.0
	Clickers	3,626	1.6	1.0
	e-portfolios	3,797	1.5	0.9
	Blogs	4,079	1.3	0.7
	Collaborative editing software	3,980	1.8	1.1
	Video	4,220	1.6	0.9
	Games	4,094	1.2	0.6
	Surveys	4,057	1.4	0.7
	Video or voice conferencing	4,119	1.2	0.6
	Plagiarism detection	4,048	1.4	0.8
Faculty	CMS	710	2.9	1.3
	Clickers	667	1.3	0.7
	e-portfolios	688	1.4	0.8
	Blogs	694	1.2	0.6
	Collaborative editing software	683	1.2	0.6
	Video	699	1.4	0.8
	Games	692	1.2	0.5
	Surveys	693	1.2	0.6
	Voice or video conferencing	692	1.2	0.6
	Plagiarism detection	695	1.5	0.9

Table 4

Student Clusters

	High Use	Medium Use	Low Use	No use
Arts and Humanities	2.1%	16.6%	43.2%	38.1%
Biological Sciences	2.6%	18.5%	48.1%	30.9%
Business	5.4%	23.4%	51.5%	19.6%
Education	7.0%	21.4%	42.9%	28.7%
Engineering	4.1%	13.0%	43.8%	39.0%
Physical Science	1.9%	12.1%	50.5%	35.5%
Professional	7.6%	22.8%	50.0%	19.6%
Social Science	4.3%	18.9%	52.2%	24.6%
All	4.8%	19.8%	48.2%	27.1%

Table 5

Faculty Clusters

	High use	Low use	No use
Arts and Humanities	11.7%	33.0%	55.3%
Biological Sciences	7.3%	53.7%	39.0%
Business	6.0%	67.0%	27.0%
Education	17.9%	42.9%	39.3%
Engineering	8.8%	35.3%	55.9%
Physical Science	5.9%	52.9%	41.2%
Professional	5.9%	86.3%	7.8%
Social Science	7.0%	57.0%	36.0%
All	8.9%	53.6%	37.6%

Table 6

*Student Responses by Discipline**

	Arts and Humanities	Engineering	Physical Science	Biological Sciences	Social Science	Education	Business	Professional
CMS	2.8	2.8	2.8	3.0	3.0			
				3.0	3.0	3.1		
					3.0	3.1	3.3	
						3.1	3.3	3.3
Clickers	1.4	1.4	1.4	1.5				
		1.4	1.4	1.5	1.6	1.6	1.6	
								1.9
e-portfolios	1.3	1.3	1.3	1.2	1.3			
	1.3	1.3	1.3		1.3			
							1.4	1.4
						2.3		
Blogs	1.3	1.3	1.2	1.2	1.3		1.3	1.4
	1.3	1.3			1.3	1.4	1.3	1.4
Collab. editing software	1.5	1.7	1.5	1.7	1.7	1.8		
		1.7		1.7	1.7	1.8	1.9	1.8
Video		1.3	1.3	1.5				
	1.6			1.5	1.6	1.6	1.6	1.6
Games	1.1	1.2	1.1	1.2	1.2	1.2		
	1.1	1.2		1.2	1.2	1.2		1.3
		1.2		1.2	1.2	1.2	1.3	1.3
Surveys	1.2	1.3	1.2	1.3				1.4
	1.2	1.3		1.3		1.4		1.4
		1.3			1.4	1.4	1.5	1.4
Video or voice conferencing	1.1		1.1	1.1	1.2	1.2	1.2	1.2
		1.3				1.2	1.2	1.2
Plagiarism detection	1.3	1.3	1.3	1.4	1.4		1.4	
	1.3			1.4	1.4	1.5	1.4	
				1.4	1.4	1.5	1.4	1.6

* - Each row is a homogenous subgroups (Tukey's test; $p < .05$)

Table 7

*Faculty Responses by Discipline**

	Arts and Humanities	Engineering	Physical Science	Biological Sciences	Social Science	Education	Business	Professional
CMS	2.4	2.5	2.9	2.8	2.9	2.9		
		2.5	2.9	2.8	2.9	2.9	3.1	
							3.1	3.7
Clickers	1.1	1.3	1.2	1.3	1.2	1.2	1.2	
		1.3	1.2	1.3	1.2	1.2	1.2	1.6
e-portfolios	1.3	1.4	1.2	1.3	1.2		1.3	1.3
						2.1		
Blogs	1.3	1.1	1.1	1.2	1.2	1.3	1.1	1.2
Collab. Editing tools	1.2	1.2	1.1	1.2	1.2	1.4	1.2	1.1
Video	1.3	1.2	1.1	1.3	1.4		1.3	1.3
	1.3			1.3	1.4	1.6	1.3	1.3
Games	1.1	1.2	1.2	1.0	1.1	1.2	1.2	1.3
Surveys	1.1	1.3	1.1	1.1	1.3	1.4	1.3	
	1.1	1.3			1.3	1.4	1.3	1.4
Voice or video conferencing	1.1			1.0	1.1		1.1	
	1.1		1.3		1.1		1.1	1.3
			1.3		1.1	1.4	1.1	1.3
		1.4	1.3			1.4		1.3
Plagiarism detection		1.3	1.2	1.4	1.5	1.4	1.4	
	1.7	1.3		1.4	1.5	1.4	1.4	
	1.7			1.4	1.5	1.4	1.4	1.8

* - Each row is a homogenous subgroups (Tukey's test; $p < .05$)

Appendix A

NSSE (Student) Technology Survey Instrument Questions

1. **During the current school year, did any of your courses use a course management system (on-line systems designed to support learning such as WebCT, Blackboard, Desire2Learn, Sakai, etc.)?**
   (Yes; No)

2. **During the current school year, about how often did you use the following features of course management system(s) (on-line systems designed to support learning such WebCT, Blackboard, Desire2Learn, Sakai, etc.)?**
   (Very often; Often; Sometimes; Never; This option was not available)
   a. Posting of announcements, assignments, or course readings
   b. Lecture notes/presentation slide posting
   c. Homework, quizzes, tests, etc.
   d. Instructor feedback on assignments
   e. Grade posting
   f. Discussion boards
   g. Instant messaging/chat room

3. **During the current school year, about how often did you use the following technology in your courses?**
   (Very often; Often; Sometimes; Never; I do not know what this is)
   a. Course management systems (WebCT, Blackboard, Desire2Learn, Sakai, etc.)
   b. Student response systems (clickers, wireless learning calculator systems, etc.)
   c. Online portfolios
   d. Blogs
   e. Collaborative editing software (Wikis, Google Docs, etc.)
   f. Online student video projects (using YouTube, Google Video, etc.)
   g. Video games, simulations, or virtual worlds (Ayiti, EleMental, Second Life, Civilization, etc.)
   h. Online survey tools (SurveyMonkey, Zoomerang, etc.)
   i. Videoconferencing or Internet phone chat (Skype, TeamSpeak, etc.)
   j. Plagiarism detection tools (Turnitin, DOC Cop, etc.)

4. **During the current school year, how often did you use each of the following methods of communication with your instructors?**
   (Very often; Often; Sometimes; Never)
   a. Face-to-face
   b. Phone

c. Text messaging on a cell phone
d. E-mail
e. Discussion boards/course management system postings
f. Instant messaging/chat rooms
g. Social network sites (Facebook, LinkedIn, MySpace, etc.)
h. Other (write-in)

5. **During the current school year, about how many of your classes did you take entirely online?**
   (All; Most; Some; None)

Appendix B

FSSE (Faculty) Technology Survey Instrument Questions

For the following questions, please answer with regard to the *undergraduate* courses that you teach.

1. **During the current school year, did you use a course management system(s) (online systems designed to support learning such as WebCT, Blackboard, Desire2Learn, Sakai, etc.)?**
   (Yes; No)

Note: Respondents that answer "no" to question 1 did not receive questions 2 and 3.

2. **Do you use your institution or department's supported course management system(s)?**
   (Yes; No, my institution or department supports a course management system(s), but I use something else; No, my institution or department does not support a course management system (s))

3. **During the current school year, about how often did you use the following features of a course management system(s)?**
   (Very often; Often; Sometimes; Never; This option was not available)
   a. Posting of announcements, assignments, or course readings
   b. Lecture notes/presentation slide posting
   c. Homework, quizzes, tests, etc.
   d. Instructor feedback on assignments
   e. Grade posting
   f. Discussion boards
   g. Instant messaging/chat room

4. **During the current school year, about how often did you use the following technology in your courses?**
   (Very often; Often; Sometimes; Never; I do not know what this is)
   a. Course management systems (WebCT, Blackboard, Desire2Learn, Sakai, etc.)
   b. Student response systems (clickers, wireless learning calculator systems, etc.)
   c. Online portfolios
   d. Blogs
   e. Collaborative editing software (Wikis, Google Docs, etc.)
   f. Online student video projects (using YouTube, Google Video, etc.)

g. Video games, simulations, or virtual worlds (Ayiti, EleMental, Second Life, Civilization, etc.)
h. Online survey tools (SurveyMonkey, Zoomerang, etc.)
i. Videoconferencing or Internet phone chat (Skype, TeamSpeak, etc.)
j. Plagiarism detection tools (Turnitin, DOC Cop, etc.)

5. **During the current school year, how often did you use each of the following methods of communication with your students?**
   (Very often; Often; Sometimes; Never)
   a. Face-to-face
   b. Phone
   c. Text messaging on a cell phone
   d. E-mail
   e. Discussion boards/course management system postings
   f. Instant messaging/chat rooms
   g. Social network sites (Facebook, LinkedIn, MySpace, etc.)
   h. Other (write-in)

6. **During the current school year, about how many of your courses did you teach entirely online?**
   (All; Most; Some; None)