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Classroom Technology in Business Schools: A Survey of Installations and Attitudes toward Teaching and Learning

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A survey of administrators and faculty of The Association to Advance Collegiate Schools of Business (AACSB) accredited business schools provided insights into current classroom technology infrastructure, attitudes towards technology and learning, and the use of web course tools in business school classrooms. The results of the survey provided four major findings: (a) business schools are using high levels of multi-media technology in their classrooms; (b) levels of technology are currently deemed adequate; (c) business school personnel believe that technology has improved learning and instructor efficiency; and (d) the business schools' disciplines considered to have the greatest need for classroom technology enhancements are Management and (Business/Management) Information Systems.

The days of walking into a classroom equipped only with lecture notes are fast becoming numbered. Business schools have growing needs for sophisticated classroom technology because of the types of subjects taught, a desire to mirror the use of technology in industry, and the fact that many classes are often taught in large auditoriums. Classroom technology investments are also being driven by evidence that technology enhances student learning (Krentler & Willis-Flurry, 2005).

State-of-the-art technology in the classroom has become a competitive tool for recruitment by schools that hope to meet or exceed the expectations of students and parents. Student "millenials," born in the 1980s and raised on technology, may hold technology expectations "that will soon alter the

way professors teach, the way classrooms are constructed, and the way colleges deliver degrees” (Carlson, 2005). Business college technology infrastructure may also represent an important bargaining chip for attracting or retaining faculty who have brought expectations with them from graduate schools or industry. Finally, The Association to Advance Collegiate Schools of Business (AACSB) accreditation standards also provide an impetus for technology investments by business schools.

Much of the literature related to technology infrastructure and business school classrooms is general and does not provide current, specific equipment data for all disciplines. The purpose of this article is to contribute to the literature by (a) providing insights into the types of technology found in U.S. business school classrooms, (b) illuminating administrators’ attitudes toward technology, student learning and teaching, and (c) reporting relative rankings of technology needs by discipline.

REVIEW OF THE LITERATURE

Information technology has brought about a modern industrial revolution in learning and classroom productivity through economies of scale, mass customization, teaching convenience, and alternative means of assessment (Massy & Zemsky, 1995). Universities are important beneficiaries of technology gains, but they often struggle with limited resource allocation and implementation. The results of a 1999 survey of business school chairs indicated that many of their institutions did not have appropriate levels of multimedia or facilities for their use (Gatlin-Watts, Arn, & Kordsmeier, 1999). Fewer than half of the respondents strongly agreed or agreed with statements related to appropriate facilities, software, access, and equipment for multimedia use.

Many of the resource problems affecting state-supported institutions in the United States can be traced to decreasing levels of state funding. In 2003-2004 aggregate higher education funding was down 2.1% nationally (Arnone, 2004; “State Appropriations for...”, 2004) and Midwestern states such as Illinois and Michigan showed decreases of 2.2% and 3.3%, respectively (Potter, 2004; “The States, Michigan”, 2005).

A number of articles in the management literature have identified technology as one of the forces driving organization change (Tichy, 1983; Kaestle, 1990); Morrison (1998) applied this perspective to the study of business schools. In a survey of business school deans, Kemelgor, Johnson and Srinivasan (2000) found that technological drivers (multimedia classrooms, Internet for instruction, distance learning, and Internet for research) were perceived as important drivers of organizational change now and in the future. The study also revealed that Deans of AACSB-accredited schools rated the

importance of multimedia classrooms higher than Deans of nonaccredited business schools.

Practical aspects of classroom media usage by faculty, including teaching effectiveness, technology-related preparation time and assessment, can also be found in the literature. Business college instructors have expressed positive attitudes toward technology: Peluchette and Rust (2005) reported that 77% of management professors believed that instructional technologies enhanced their teaching effectiveness, but time constraints related to learning and using the technology were important factors. Allocation of time for faculty to learn new technology techniques was also a concern cited by business school chairs (Gatlin-Watts et al., 1999). Serva and Fuller (2004) noted that media usage is a new and important dimension of the classroom experience that should be measured by student evaluation instruments. They recommended that effective media usage, as well as other dimensions of instructional evaluation, should be used in measures of instructor performance.

ACCREDITATION STANDARDS AND PEDAGOGY

Accrediting bodies such as AACSB International or the Association of Collegiate Business Schools and Programs (ACBSP) provide some direction regarding technology investment and usage in business colleges. The 2007 AACSB accreditation standards call for technology knowledge and skills. Standard 15 provides both direct and indirect requirements for technology: "...The curriculum management process will result in an undergraduate degree program that includes learning experiences in such general knowledge and skill as...communication abilities...(and) use of information technology..."(AACSB, 2007, p. 15).

AACSB guidelines also call for learning experiences in knowledge and skill areas such as statistical data analysis, management science, and information technologies, including competence in the uses of technology and information systems in organizations. "The school must determine the specific ways globalization and information systems are included in the curriculum, and the particular pedagogies used. Curricula without these two areas of learning would not normally be considered current and relevant" (AACSB, 2007, p. 71).

Institutions that expect to earn and maintain accreditation must meet the technology needs of their faculty as well. Regular use of technology by faculty increases students' awareness of the capabilities of technology and its ubiquitous nature. To be fully prepared, students must have access to, and practical training in, technological hardware and software.

The next section addresses the results of a survey that documents the current state of classroom technology infrastructure, business college administrators' attitudes toward technology, and student learning and attitudes related to the use of technology in teaching.

METHOD

An email survey comprised of 14 questions was sent to the Associate Dean or administrator/faculty member in charge of technology at 435 U.S. business schools in July 2006. The 435 business schools represented 100% of the AACSB member schools in the U.S. The survey was based on questions tested in a pilot study conducted by the authors in 2005-2006 and sent to a small sample of schools in the immediate region. The pilot study helped the authors formulate the content and wording of the final survey questions.

The quality of the mailing list was excellent: fewer than 10 of the email addresses were found to be incorrect or no longer valid. Most responses were returned within 4 weeks. Nonrespondents were sent two additional reminder emails at 4- and 8-week intervals, which resulted in few additional responses. By September 2006 the survey had been returned by personnel from 92 of the 435 schools, for a response rate of 21.1%.

Respondents were asked to identify the title of the respondent and his or her home department. The majority, (54%), of respondents were Associate Deans, 14% identified themselves as the Director of Information Technology and nearly 11% were Deans of their college. Respondents came from all areas of business education, but the largest number (28%) identified their home department as Management Information Systems (MIS), Business Information Systems (BIS), Computer Information Systems (CIS), Operations, or Decision Sciences. Table 1 summarizes the titles and home departments of the respondents.

Table 1
Respondents by Title or Field of Study

Title	N	%	Field of Study	N	%
Associate Dean	50	54.35%	MIS/BIS/CIS/OP/DecSci*	26	28.26%
Director of IT	13	14.13%	Economics	16	17.39%
Dean	10	10.87%	Management	14	15.22%
Faculty	7	7.61%	DirectorTechnology/Consultant	13	14.13%
Asst. Dean	5	5.43%	Finance	8	8.70%
Tech Consultant	4	4.35%	Marketing	7	7.61%
Assistant to the Dean	2	2.17%	Accounting	4	4.35%
Bus. Mgr.	1	1.09%	Ethics/Law/Other	4	4.35%
Total	92	100%	Total	92	100%

Note: *Management, Business, or Computer Information Systems, Operations or Decision Sciences

RESULTS

The first part of the survey instrument asked respondents to identify specific technology equipment found in their classrooms and to decide whether the technology was essential to classroom instruction and learning. We also asked respondents to report the relative percentage of installation of each piece of equipment. The results are contained in Table 2. A number of open-ended questions were also included to allow respondents to expand on or explain the details of newer technologies currently in use in business school classrooms.

Digital projection equipment was named by 84.8% of respondents as essential for instruction and learning and 54.5% of the business colleges surveyed have installed digital projectors in 100% of their classrooms. The second and third most essential equipment were desktop computers and internet access, named by 70.3% and 65.9%, respectively. Fewer than half (44.6%) of respondents reported classrooms equipped with a desktop computer, but more than 50% of respondents said their classrooms were internet-enabled through hardware or wireless technology.

Table 2
Inventory of Teaching Technology & Equipment
(all results expressed in percent agreement)

	Essential for instruction and learning	Nice to have but not essential	Installed in < 50% of classrooms	Installed in 50 –99% of classrooms	Installed in 100 % of classrooms	Equipment is portable among classrooms
Digital Projector & Screen	84.8	6.6	11.0	27.2	54.5	2.2
Desktop Computer & accessories	70.3	18.5	16.3	26.1	44.6	6.5
Internet access (hardwired)	65.9	26.1	14.3	17.6	56.5	2.2
Internet access (wireless)	24.2	68.5	20.9	12.0	57.6	2.2
Laptop Connection	34.1	55.4	27.2	17.4	38.5	8.8
VCR Player	39.1	46.7	7.7	27.2	47.8	12.0
DVD Player	49.5	40.7	14.1	22.8	45.7	9.8
External speakers	43.5	45.7	18.5	22.8	44.6	8.7
Overhead Projector for Transparencies	44.0	41.3	9.8	15.2	47.8	20.7
Smart Boards	9.8	75	57.6	5.4	5.4	1.1
Document Visualizer	16.3	64.1	40.2	12.0	14.1	2.2
Equipment Security System	34.8	44.6	28.3	12.0	28.3	1.1
ADA equipment	19.6	48.9	35.9	4.3	6.6	8.8
Electronic system to call for help	19.6	53.3	23.9	9.8	12.1	6.7
Dedicated service staff available at all times	50.0	31.5	15.2	7.7	29.3	n/a

Other equipment installed in 100% of business school classrooms included VCR (47.8%), overhead projector (47.8%), DVD (45.7%), and external speakers (44.6%). The equipment least likely to be installed in all classrooms was smart boards (interactive white boards that digitize written notes) at 5.4%. The relatively low usage of the technology was explained by several respondents as installation limited to labs or technology classrooms. Qualitative responses also mentioned a number of brands of smart boards in use: Elmo, Smart Technologies, Mimio, and Hitachi.

Only 14.1% of respondents said that document visualizers (classroom projection of paper documents and transparencies) were installed in 100% of classrooms; they were called essential classroom equipment by only 16.3% of respondents. The most mentioned brands of document visualizers were Wolfvision, Samsung, Promax, Elmo, Sharp, NEC, and Epson.

A number of respondents provided suggestions for improving classrooms of the future, with most of those saying that simply more technology and support were needed:

(We) need smartboard(s) in every classroom.

Wireless access in all classrooms.

Need more wireless capability, smart boards, computer upgrades, etc.

(Equipment is) not in every room. No cutting edge equipment. Not sufficient support when a breakdown.

Need better support budgets for maintenance of existing hardware.

The most common qualitative comments mentioned additional smart technology and wireless capabilities. One respondent called for “freedom tablets” to allow the instructor to roam the classroom when desired.

Technology for Disabled Students

The Americans with Disabilities Act (1990) contains provisions that can impact the provision of classroom technology in business school classrooms. Equipment for the disabled may include hearing units, sight equipment such as screen readers and magnifiers, subtitle scrolls on projection units, and wheelchair accessibilities, among other items. The responses reported in

Table 2 revealed that provision of such equipment is not widespread in business school classrooms. Even though nearly 69% of respondents felt that technology devoted to improving disabled students' classroom learning was either essential (20%) or nice to have (49%), only 6.6% of classrooms were 100% equipped with such equipment.

Respondents provided a variety of explanations related to their schools' practices. Some schools use student helpers or monitors to provide assistance. Others mentioned specific technology-based solutions: zoom text on the computer, infrared emitters and headphones for the hearing impaired, large screens and monitors, wheelchair-accessible keyboards and mice, and tables that accommodate wheelchairs. Several respondents revealed that equipment for disabled students was handled centrally and that an on-campus office provided people or equipment solutions on an as-needed basis.

The relatively low incidence of usage may be due to a variety of factors, including lack of funds or compliance monitoring, but it may also be a function of classroom size, since ADA guidelines are directed at rooms holding 49 or more seats (United States Access Board, 2003). This finding may also be related to respondents' dependence on their university's central administration or computing services to provide the impetus for including more ADA-mandated equipment in their classrooms.

SECURITY, ASSISTANCE, AND PORTABILITY

Survey respondents indicated a relatively low interest in the security aspects of classroom technology. Just 34.8% agreed that equipment security systems were essential for classroom instruction and learning. The low interest seemed surprising when one considers that the cost of equipping a classroom with basic technologies can approach \$20,000, a finding from the authors' earlier pilot study. Only 40% of respondents reported having equipment security systems in 50-100% of their classrooms. Electronic "help" systems were also not considered to be vital installations: only 20% of respondents considered them essential and only 22% had installed such equipment in 50-100% of their classrooms. These data may also indicate an either/or situation in which respondents had either a physical security system or a call system, but not both.

Qualitative data revealed a variety of security techniques: locks, anti-theft alarms, steel cables, locked cabinets, video surveillance. Two respondents mentioned password protection for equipment.

Portability of equipment—the ability to move equipment from one classroom to another—did not appear to be an important issue. While most of the schools' equipment is stationary, rather than portable or mobile, a small number indicated that equipment could be moved among classrooms, as needed.

TECHNOLOGY LEVEL, STUDENT LEARNING, AND FACULTY TEACHING

Table 3A presents the results of attitudinal questions regarding the acceptability of current levels of technology and whether technology has improved student learning and the efficiency of faculty teaching. As shown in Table 3A, nearly 85% either agreed or strongly agreed that their college's current level of technology was acceptable for present needs

Whether or not technology has a positive impact on student learning is a question of great concern for administrators making decisions about the utilization of sometimes-limited budgets for the purchase and maintenance of new technology. Despite some misgivings about the lack of firm evidence that would link improved student learning to new technology, survey respondents revealed positive attitudes toward technology and student learning. Slightly over 83% agreed or strongly agreed that the use of technology in teaching has improved student learning. Several mentioned the benefit that technology provides to diverse learning styles.

Multi-media software (allows) teach(ing) to a variety of learning styles.

Students seem to be more engaged.

The new technology keeps students and faculty engaged in improving the learning process.

We have better slides, video, audio than before.

Less time spent writing on the board and less note taking allows time for discussion.

Technology has also increased student/teacher interactions.

Allows for multiple methods of instructional delivery, provides better and more efficient note-taking...

Table 3A Attitudes Regarding Level of Installed Technology, Student Learning and Faculty Efficiency*										
	N	Strongly Disagree %	N	Disagree %	N	No Difference %	N	Agree %	N	Strongly Agree %
A. Equipment and support is at acceptable levels.	4	4.4%	8	8.9%	2	2.2%	39	43.4%	37	41.1%
B. Technology has improved student learning.	1	1.1%	1	1.1%	13	14.4%	52	57.8%	23	25.6%
C. Technology has improved teaching efficiency.	1	1.1%	1	1.1%	7	8.0%	52	59.1%	27	30.7%

*N does not equal 92 because all respondents did not answer all questions.

These data also raise the question of whether the preponderance of technology available to the instructor may lead to a teaching and learning environment that is increasingly instructor-controlled or -centered. Those who reported negative attitudes toward improvements in student learning focused on uncertainty about student outcomes and the impact of technology on teaching.

I guess I am pessimistic. I am hopeful that it has (improved student learning), but I am afraid that we have traded old technology, (such as the) overhead projector, for newer technology.

Many people simply read from PowerPoint presentations prepared by the textbook company, which I think hurts learning.

The survey contained three questions pertaining to the teaching aspects of classroom technology: (a) teaching efficiency, (b) utilization of web course tools, and (c) the relative need for technology for each business school discipline. Table 3A indicates that the vast majority, 90% of respondents, either agreed or strongly agreed with the statement that technology has improved the efficiency of teaching by business faculty. This finding is consistent with the positive attitudes toward technology reported in the Peluchette and Rust (2005) survey of management faculty. Qualitative feedback provided some pros and cons on the topic:

There is a lot more variety in the material presented in a typical textbook support system, replaces putting readings on reserve.

We can cover more, but they aren't learning more.

It is much easier to provide students access to information.

Provides access to timely information and myriad examples.

Correlations between responses to the attitudinal questions are found in Table 3B. The correlation between use of technology to improve student learning and improve teaching efficiency was .633, indicating that the majority of respondents that rated technology as improving student learning high also rated teaching efficiency of business subjects as high. We found significant, but smaller, correlations between having acceptable levels of technology and student learning and faculty teaching.

Table 3B
Differences on Agreement by Respondents for Acceptable Levels of Technology, Student Learning and Faculty Efficiency

A. Equipment and support is at acceptable levels.				
Test of Response Difference Between	Strongly Disagree / Strongly Agree	Disagree/ Strongly Agree	Strongly Disagree / Agree	Disagree/Agree
t-value	2.72E-08	5.8E-06	6.72E-09	1.85E-06
(p-value)	≤.001	≤.001	≤.001	≤.001
B. Use of technology in teaching has improved student learning.				
Test of Difference Between	Strongly Disagree / Strongly Agree	Disagree/ Strongly Agree	Strongly Disagree / Agree	Disagree/Agree
t-value	2.18E-06	2.18E-06 ≤.001	9.76E-17	9.76E-17
(p-value)	≤.001		≤.001	≤.001
C. Use of technology has improved teaching efficiency by faculty.				
Test of Difference Between	Strongly Disagree / Strongly Agree	Disagree/ Strongly Agree	Strongly Disagree / Agree	Disagree/Agree
t-value	1.53E-07	1.53E-07 ≤.001	9.76E-17	9.76E-17
(p-value)	≤.001		≤.001	≤.001
Correlation A with B = .377; Correlation A with C = .330; Correlation B with C = .633				

We also included questions about the use of laptops and course tools in business school classrooms (Table 4). The survey indicated that a relatively high proportion (62%) of students regularly bring laptops to class, but a surprisingly low proportion of respondents (21.7%) said that students were required to bring laptops to class. This finding suggests that, to some degree, business school administrators believe it is their responsibility to provide classroom technology tools to their students.

Table 4
Use of Laptops and Web Tools in Classrooms

	Percent Agreement
Require Students to Bring Laptop to Specific Classes	21.74%
Students Bring Laptops to Class	61.95%
WebCt/Blackboard Use/Availability	43.48%
Other Course Tool (not specified)	22.8%

Business school professors appear to be making significant use of web course tools, such as WebCT and Blackboard. Our data indicated that 43.5% of the sample indicated both WebCT and Blackboard, perhaps due to the merger of the companies in 2005. Another 22.8% of respondents listed “other course tool” product, which suggests that approximately two-thirds are using some type of internet-based course tool program.

Finally, we were interested in how respondents ranked the business college disciplines in terms of their requirements for technology tools in the classroom. Although no single discipline stood out among the rankings, Management had the highest number of first place rankings, MIS had the highest number of second place rankings and Accounting had the second highest number of second place rankings. In our study, Finance and Marketing were perceived as the disciplines with the lowest need for technology. Rankings for all disciplines can be found in Table 5.

Table 5
Number of Respondents Ranking Disciplines
with Greatest Need for Technology Investments

Rank Order	Accountancy	Finance	Management	Marketing	Information Systems	Other Subjects
Highest	3	10	32	10	2	3
Second Highest	22	1	2	7	31	10
Total	25	11	34	17	33	13

The relatively high ranking for MIS is consistent with the findings of Hsu and Tanner (2006), who concluded that MIS/CIS faculty use classroom technology significantly more than Accounting and Finance faculty. They did not measure the usage patterns of Management or Marketing faculty, however.

CONCLUSIONS, LIMITATIONS, AND AREAS FOR FURTHER STUDY

The results of our survey illustrate that U.S. business colleges are making extensive investments in classroom technology and that there are basic classroom technology components common to business colleges. The typical classroom for the institutions surveyed permitted the instructor to use the Internet, project material from a desktop computer in the room, and use multimedia in several formats, including videos, CDs and DVDs. The instructor also had the ability to connect his or her laptop computer to other classroom hardware. Smart boards, document visualizers, and other advanced hardware are not uncommon in many institutions.

A limitation of this study is its 21.1% response rate. We believe that the timing of the electronic mailing, which was conducted in the summer of 2006, may have had an impact on the response rate. We also believe that respondents' home discipline/department may have influenced some of the findings. For example, respondents' ratings of the disciplines with the greatest need for classroom technology indicated relatively high rankings for MIS and Management, two departments which were well represented in the survey. However, other disciplines such as Finance and Marketing, which were evaluated as having lower need for technology than other disciplines, comprised a minority of respondents.

In contrast to a 1999 study of business school department chairs (Gatlin-Watts et al., 1999), the institutions we surveyed were basically satisfied with their levels of installed technology. This finding may be attributed to the difference in respondent, that is, Chair versus Associate Dean, or the timing of the surveys: 1999 versus 2006.

Although the survey did not specifically request funding information or sources, a number of respondents mentioned funding shortfalls and challenges. We believe that the funding of business schools' technologies is a subject ripe for future research because business schools considering upgrades to classroom technology may need to look beyond their state legislatures and tuition increases to pay for these improvements. A number of schools today use technology donated by (or fundraising spearheaded by) committee members and their companies (Middlemiss, 2004; "Innovative Use of Dell...", 1997). For example, the Smith School of Business at the University of Maryland received a pledge of \$3 million to build and en-

hance the technology resources of the school from benefactor Robert Smith ("Smith School of Business...", 2003). In this era of decreased state and federal funding for education, industry may be called upon to help provide classroom technology, if their expectations of well trained employees are to be realized.

Technology can enhance all curricular areas of the modern business school and serve as a driver of curriculum change. In the near term, classroom technology will probably continue to include many of the software and hardware products mentioned in this article. A multitude of new and emerging technologies will need to be learned, managed, and supported by faculty, administrators, and technology support personnel. The challenges for faculty, staff, and administrators are enormous and ongoing.

This article contributes to the literature by providing a benchmark for business college personnel who want to evaluate their institutions' classroom current technology relative to a larger group of business colleges across the United States. Oftentimes, this type of information is not readily available to faculty or administrators considering additions to or replacement of classroom technology. We believe that the information and issues discussed here can serve as a guide to large and small institutions considering investments in classroom technology now and in the future.

References

- Association to Advance Collegiate Schools of Business International. (2007, January). Eligibility procedures and accreditation standards for business accreditation. Tampa, FL: Author.
- Arnone, M. (2004). State spending on colleges drops for the first time in 11 years. *Chronicle of Higher Education*, 50(19), A24.
- Carlson, S. (2005). The net generation goes to college. *Chronicle of Higher Education*, 52(7), A34.
- Gatlin-Watts, R., Arn, J., & Kordsmeier, W. (1999). Multimedia as an instructional tool: Perceptions of college department chairs. *Education*, 120(1), 190.
- Hsu, H.Y., & Tanner, J.R. (2006). An assessment and comparison of the current state of classroom technology usage in accounting, finance and management information systems. *International Journal of Innovations and Learning*, 3(5), 488-498.
- "Innovative use of Dell technology makes a top business school even better." (1997). *T.H.E Journal*, 25(5), 40.
- Kaestle, P. (1990, July/August). A new rationale for organizational structure. *Planning Review*, (pp. 20-27).
- Kemelgor, B., Johnson, S., & Srinivasan, S. (2000). Forces driving organizational change: A business school perspective. *Journal of Education for Business*, 75(3), 133-137.
- Krentler, K.A., & Willis-Flurry, L.A. (2005). Does technology enhance actual student learning? The case of online discussion boards. *Journal of Education for Business*, 80(6), 316-321.

- Massy, W., & Zemsky, R. (2005, June). Using information technology to enhance academic productivity. Paper presented at the Enhancing Academic Productivity Conference, Wingspread, WI. Retrieved November 16, 2007, from <http://www.educause.edu/LibraryDetailPage/666&ID=NLI0004>
- Middlemiss, J. (2004). Wall street's future stars. Retrieved November 16, 2007, from <http://www.wallstreetandtech.com/features/showArticle.jhtml;jsessionid=H5ROWPR1RBYLQQSNDL0SKH0CJUNN2JVN?articleID=21401582>
- Morrison, I.J. (1998, January/February). The second curve: Managing the velocity of change. *Strategic Leadership*, (pp. 7-11).
- Peluchette, J.V., & Rust, K. (2005). Technology use in the classroom: Preferences of management faculty. *Journal of Education for Business*, 80(4), 200-205.
- Potter, W. (2004). State lawmakers again cut higher-education spending: Half of the states reduce appropriations to public colleges. *Chronicle of Higher Education*, 49(48), A22.
- Serva, M., & Fuller, M. (2004). Aligning what we do and what we measure in business schools: Incorporating active learning and effective media use in the assessment of instruction. *Journal of Management Education*, 28(1), 19-38.
- "Smith school of business lands major gifts." (2003). *Outlook Online*. Retrieved November 16, 2007, from <http://www.outlook.umd.edu/article.cfm?id=1193>
- "State appropriations for higher education, 2003-2004." (2004). *Chronicle of Higher Education*, 50(9), A25 - A27.
- "The states, Michigan" [Almanac issue]. (2005). *Chronicle of Higher Education*, 52(1), 66.
- Tichy, N.M. (1983). *Managing strategic change: Technical, political, and cultural dynamics*. New York: John Wiley & Sons.
- United States Access Board. (2003). *ADA accessibility guidelines for buildings and facilities (ADAAG)*. Washington, DC: Author. Retrieved November 16, 2007, from <http://www.access-board.gov/adaag/>