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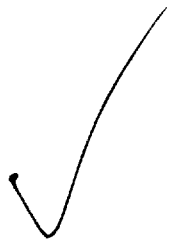

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REVIEW OF INSTRUCTIONAL MATERIALS

B-SCHOOLS ON THE I-WAY:[1] AVOIDING POTHOLES, DEAD ENDS, AND CRASHES

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Information technologies are changing the way we work, teach, learn, and live. Some have championed this cause in their schools, many faculty and students are prepared to enter the information superhighway (I-Way), and all are being challenged to incorporate the emerging technologies. In spite of all the attention given to instructional technologies, a single pedagogy constant remains from Aristotle, Plato, and Socrates through Gutenberg's printing press and today's Internet: the logical linear lecture format. This approach is good for transmitting data and facts even to a largely passive audience; it has been successful in the past and dominates most of our profession. If anyone believes change comes easily to the university system, consider this: "Of the sixty-six institutions from the fifteenth century that still exist, sixty-two are universities" (Ives & Jarvenpaa, 1996, p. 40). In fact, the role of the university professor has been essentially unchanged since the German statesman and scholar Wilhelm Von Humboldt introduced the researcher-teacher model on founding the University of Berlin in 1809. In an era of rapid technological change, a university's slow and cautious style may prove to be too little, too late.

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Following several months of spirited debate over Tom Peters's keynote address at the 1996 Organization Behavior Teaching Conference, David Bradford (1997) posted this message to the Organization Behavior Teaching Society Listserv titled "Death of the Classroom":

> I think Tom Peters is absolutely right. Remember that the first classroom (in 11th Century Italy) was because the source of all information was in 1 teacher who stood up in front—interesting that so little has changed in almost a thousand years!
>
> I think the classroom is for the teacher's convenience. It maximizes teacher control (as well as whatever ego needs we have to perform/dictate) and sends absolutely the wrong message in today's world (that knowledge can be bundled in discrete packages that can be prelabled, that there is one leader with the answer, that most conversation should go through the leader, that conflict is to be discouraged, etc.).
>
> I predict that we will focus more on measuring end learning and free up students to go about that in a variety of ways. I also predict that there will be more self-managed work teams.
>
> In a world of increased ambiguity, we have to stop removing ambiguity by the highly structured classroom.

Other critics point out that our education system is based on an outdated industrial factory model designed to process raw materials through an assembly line that provides vast amounts of identical products to meet uniform standards. This paradigm fails to meet the requirements of a knowledge-based society, in which workers and managers must assemble data and facts into meaningful information to make decisions and create new knowledge. Now we have a multimedia smorgasbord of computer simulations and exercises; broadcast studios and videotapes; videoconferencing; commercial courseware; CD-ROM and multimedia work stations; interactive classrooms; presentations and handouts; and the increasingly popular Internet, which offers data, documents, and discussion. In discussing the liberating role of information technology, Massy and Zemsky (1995) state, "It enables students to work at their own pace with continuous assessment, in contrast to the traditional post-secondary education method, which can be described as batch-processing with episodic assessment" (p. 4). Past technology advances have done little to shift our teaching paradigm. How will these emerging instructional technologies change our professions? Will this brave new world merely increase factual information, or will it enhance reasoning ability, creativity, and critical thinking?

Instructional technology promises to improve these higher order skills, but skeptics doubt that real learning occurs in spite of all the fun, activities,

and ease of use. Although the Internet can empower us to change our teaching environment, it is not learning's sole deterministic force. As one of many tools available to instructors, administrators, and students, we cannot expect electronic education alone to correct today's problems (CNET Staff, 1997). Still, our skills will necessarily have to extend beyond subject mastery: We will have to monitor and motivate on-line communications even while turning over learning responsibilities to students. Many teachers believe their traditional approach is just fine, thank you very much, and they are right that there is little evidence that students learn more with computer technology or that they become active learners. And yet, I believe our future roles will be different as information technology changes our job and what we do in class.

The I-Way: Full Speed Ahead?

With entering students increasingly comfortable and astute with using computers, this technology has become an increasingly important competitive weapon as colleges compete for undergraduates. Coinciding with these trends (albeit at the other end of the spectrum) is more workers finding they must return to college or otherwise engage in lifelong learning but do not have the time to attend conventional campuses regularly. Skills necessary for taking a class using the Internet are similar to those necessary to work in organizations today and for lifelong learning. The Internet can increase discussion; restructure the class with an on-line simulation; and access classic political essays, government data and documents, current events, and textbook descriptions in a virtual library "that is open 24 hours a day, where everything is available for check-out and yet everything is always on the shelf, and where powerful indexing and searching tools locate the precise passages a user seeks" (Ball, 1995, p. 719).

The Internet offers many advantages, and Bailey and Cotlar (1994) provide examples of its use in the classroom to transcend geographical space. E-mail can make lecture notes available on computer files, bring guest speakers to the class, announce changed assignments, and replace office meetings. Electronic bulletin board systems and mail lists facilitate collaborative work. It is also easy to invite outside panels of far-flung experts into a virtual pub or café to chat with participants and share their opinions. Nor does time restrict the Internet, which can extend discussions by continuing after class hours and sharing experiences. It also provides access to the disabled, lowers minority and gender barriers, and encourages otherwise inhibited students to contribute to discussions. Finally, extended benefits of using computer technology

include automating such mundane administrative class functions as posting assignments, maintaining a log of student activities, providing electronic feedback to both students and instructor, and summarizing grades.

These applications will also change our roles. In reviewing these instructional technologies, Reinhardt (1995) outlines the implications of changing educational paradigms. For instance, classroom lectures are yielding to individual exploration as networked PCs provide access to information. Students who are active apprentices rather than passive absorbers require skill development and simulations. Classes that emphasize team learning over individual work now have collaborative tools and e-mail available. The omniscient teacher is being replaced by the teacher as guide, who has access to experts over a network. Fast-changing content requires networks, and an increasingly diverse student population requires a variety of teaching methods. Reinhardt also predicts that "education on demand" will outpace "entertainment on demand" as the cyberclass creates virtual colleges, virtual classrooms, and virtual groups.

The virtual college is increasingly popular. There is a burgeoning offering of on-line education that requires only a personal computer and modem. The University of Phoenix has a complete business program that uses computer networks for its bulletin boards, library access to help research papers, and conference rooms for students and teachers to gather and hold discussions. New York University's Virtual College became the first-ever provider of higher education via interactive video and home computers by offering "telecourses" in applied information systems and virtual work groups. The National Technological University of Fort Collins, Colorado, offers master's degrees to engineers, computer scientists, and managers who take video courses at dozens of U.S. campuses. The United Kingdom's Open University, with more than 218,000 students enrolled in its professional development programs, claims to be "Britain's largest and most innovative educational and training organisation. It leads the world in the large-scale application of technology to learning" (Open University, 1996).

Conventional campuses are also experimenting with the virtual classroom (Stemer, 1995). Four California state university campuses use two-way video to share MBA courses, and four State University of New York campuses use video, e-mail, and computers to share engineering courses. The Rensselaer Polytechnic Institute (RPI) in Troy, New York, created a studio for its undergraduate physics course, where multimedia work stations arranged in concentric semicircles combine lectures, recitation, and laboratory work. RPI also installed computers in dormitories, classrooms, and laboratories and has a satellite video program that transmits courses to corporate locations. The New Jersey Institute of Technology in Newark created 50 video courses available on cable television or tape. Drew University, also in New Jersey, provides all faculty and students with computer equipment and has a multimedia lab where art students digitally paint and draw, and music students e-mail their compositions to the instructor.

Virtual groups are also increasingly popular. Martin de Holan and Kisfalvi (1996) link business students and professors from different universities around the world to jointly analyze a strategy case using a common format. With computer technology permitting greater access to information and more decision participants, they studied such interpersonal and group dynamics as leadership, commitment, and communications. They found that technical, research, and organization skills were the most valued as long as members oriented the group toward completing its task. Yakimovicz and Murphy (1995) studied adult learners in a distance-education class that employed teleconferencing, e-mail, and the Internet. With teachers who were "active, visible, and deliberately facilitative in the . . . electronic discussion group," students took responsibility for their own learning as "grades became less of an incentive" (p. 209).

Along with proliferating virtual colleges, virtual classrooms, and virtual groups, the Internet has the potential to change the way we business educators design and deliver our courses and the knowledge and skills students take with them on their jobs and through their careers. Ives and Jarvenpaa (1996) posit a number of underlying assumptions about the impact of technologies on business education. Their new vision is the rise of virtual learning communities, students exercising greater control over their education, a shifting emphasis to lifelong learning, and "just-in-time" learning displacing "just-in-case" (p. 35) learning. They also predict that demonstrated skills will replace university certification, even as new types of institutions certify skills and abilities. Their international scenario assumes more providers, with collaboration between them while simultaneously competing for students. Information will become visual rather than textual, and classes will simulate real events. Finally, greater university-business partnerships will result in tighter coupling of theory and practice.

Private-sector competition is also encroaching on business school education. If traditional universities fail to change their campuses, curricula, and classes to exploit this new information technology, they risk being replaced by new educational suppliers. Among today's prominent corporate education programs and training centers are Andersen Consulting, Disney, General Electric, and Motorola. Davis and Botkin (1994) predict that "the private [business] sector will eclipse the public [school systems] sector as our

predominant educational institution" (p. 170). Vying with universities and corporate in-house training are such newcomers to distance education as cable and public broadcasting television (e.g., Mind Extension University), telecommunications companies, textbook and software publishers, and independent consultants offering satellite transmissions, correspondence courses, and video instruction. With increasing concentration of a geographically fragmented industry, Ives and Jarvenpaa (1996) warn that " 'business as usual' is a recipe for failure and an open invitation to nontraditional competition" (p. 36).

Mainstream business schools are responding to student demands and competitive threats by making programs available anywhere and anytime. Many are also providing videoconferencing, e-mail systems, Lotus Notes, virtual reality, simulations, and the Internet to their established executive education and MBA programs. The Harvard Business School recently spent $9 million on instructional technology, and Dartmouth's Tuck School spent $4 million (Lublin, 1996). To consolidate their efforts, eight business schools formed the Executive Education Network to broadcast live interactive classes to corporate sites (Byrne, 1995). An American Assembly of Collegiate Schools of Business (AACSB) spokesperson estimates there are about 35 U.S. MBA programs offered at least in part through distance education (Lublin, 1996). It appears that business schools must get on the I-Way if they want to attract students and maintain their influence and prestige.

In spite of the flurry of activity, few have empirically studied the impact information technology has on graduate business education. Studying electronic classrooms in MBA accounting and information systems classes, Leidner and Jarvenpaa (1993) found that the pedagogy was more important than the technology, with students divided about the emphasis on computer exercises and class style. The biggest factors for success were the instructor's attitude toward computer-based teaching methods and the teaching style. They conclude that "individual styles can and perhaps must be modified to make better use of computer-based teaching methods. . . . The different outcomes resulted from the degree of structure and the amount of questioning" (p. 42). Computer exercises primarily taught procedures and improved problem-solving skills, whereas traditional lecture methods were better at conveying factual material and asking the class conceptual questions that furthered students' analytical skills. Using computers just to make lectures more presentable rather than as an opportunity for interaction did not enhance the learning experience. A major complaint was excessive time using the computer system or learning its procedures.

The I-Way: Caution Signs Ahead?

Early adopters should remain prudent until there are more impact studies of the technological promises and prospects. Information technology may not turn out to be the silver bullet that will cheaply provide high-quality education to the masses. Cyberspace might quickly accumulate raw data, but it cannot substitute for classes and campuses, with their ingrained skepticism, informal relationships, and serendipitous interactions that create knowledge. Noam (1995) predicts that the future of the

> physical university lies less in pure information and more in college as a community; less in wholesale lecture, and more in individual tutorial; less in Cyber-U, and more in Goodbye-Mr.-Chips College. Technology would augment, not substitute, and provide new tools for strengthening community on campus, even beyond graduation. (p. 249)

Green and Gilbert (1995) warn of excessive expectations some have of instructional technology to improve productivity and quality. To them, the improvements are in content, curriculum, and communications: "The real long-term academic benefit of information technology will be what it brings to pedagogy and the curriculum. . . . What information technology does best . . . is deliver content and provide access to information and to other people" (p. 16).

Stoll (1995) offers a damning indictment of the changing faculty-student relationship and raises questions about genuine quality improvements. Electronic correspondence courses provide the same information as a university, but "Isolated facts don't make an education. Knowledge and learning do not come from data alone. Creative problem solving depends on context, interrelationships, and experience" (Stoll, 1995, p. 134). To him, computers have nothing to do with learning and are even unnecessary for posting assignments, encouraging collaboration, or even for providing information in most college courses. Providing facts does not teach skills or insights, and although students obtain tools, they do not understand concepts. Thinking is difficult and learning is sometimes painful, but computers mislead students into believing it is important to gather information to find clear-cut answers while ignoring discovery and personal accomplishment that have no preconceived correct solution. Arm's-length learning cannot replace teachers or inspire student commitment, but instantaneous communications around the world and around the clock can create resentful faculty placed on perpetual call.

Another change in our relationship with students is that we will not view them as passive recipients of our knowledge but as our coconspirators in the

discovery process. Everyone in a learning community, regardless of geographic boundaries, becomes participative and cooperative. So, even as the world opens up, the local community closes. It is easy to communicate casually with strangers halfway around the world and convenient to ignore neighbors. Staring at screens prevents meaningful personal interactions. Even when successful in achieving narrow objectives, an Internet class could prevent leisurely reflection of the larger issues. For instructional technologies that require a great deal of time and effort, administrations must provide resources to develop teaching materials and include such efforts in personnel evaluations (see Bilimoria, 1997, for a discussion of these).

There are more serious criticisms of the Internet. Its inherent democracy in providing information to the masses increases the size and diversity of the learning community. However, information flows freely both ways: Because anyone with a PC and modem can put anything out on the Internet, the increasing garbage and a burgeoning vanity press are of questionable quality, usefulness, and reliability. There is also a danger of mass plagiarism, and already, archived homework assignments and answers are available electronically.

A Traditional MBA Course Hits the Road

The State University of New York has tried to keep abreast of these developments by sponsoring an annual conference for computing instruction technologies. The 1994 meetings were held at the Albany campus. Teaching strategic management and business ethics, my computer experience was limited to statistical analysis, word processing, spreadsheet, and presentations. I serendipitously wandered over for several hands-on tutorials, listened intently to a couple of nationally prominent advocates, and informally chatted with colleagues from around the state who had experimented with various types of pedagogies and technologies. Best of all, I obtained numerous Internet resources and locations that kept me happily occupied for the next 2 months. During that splendid summer of 1994, I learned to use e-mail and joined listservs, only to rapidly unsubscribe as my mailbox overflowed with junk mail. I evolved from a "newbie" to an intolerant flamethrower, attacking and ridiculing new arrivals who made the same egregious errors I had made just weeks earlier.

As summer became fall, I had to choose a textbook for the course I would be teaching, titled *The Social, Political, and Legal Environment of Business.* My interim dean would periodically ask about my text selection, but I was contemplating the virtues of using a virtual textbook. My delays became a self-fulfilling prophecy when I missed the bookstore's ordering deadline. With 2 weeks remaining before classes began, I furiously scoured the Internet for available information and locations, downloading and editing whatever might be pertinent for the course.

In many ways, I was fortunate to be teaching the business ethics course. After all, it deals with current business issues that appear ideal for searching the Internet. We explored issues of leadership and values and how they determine relationships between business and its stakeholders. The course also dealt with ethical dilemmas managers face operating in today's highly competitive arena. Most firms face increasing environmental turbulence that includes restructuring, acquisitions and leveraged buyouts, decline in many U.S. manufacturing industries, deregulation and privatization, global competition, advances and dangers of science and technology, concern for social responsibility, and corporate governance. Equally important are considerations of what business ultimately means in terms of human fulfillment and moral merit, and how to make markets efficient and equitable in meeting those ends. Today's managers must deal with a broader nontraditional set of stakeholders and new forms of political action, so they must become familiar with critical issues and arguments from many perspectives. This course provided a forum and opportunities to discuss crucial, contentious, and controversial issues.

Being somewhat cautious, I decided to conduct conventional case discussions and require traditional readings for half the course. For the remainder, this class communicated extensively through the use of our VAX mainframe computer. Besides being the Internet gateway, the VAX provided us with e-mail for personal messages; a news reader for newspapers, periodicals, and Usenet bulletin boards; and VAX Notes (a local bulletin board system) as the class's central communicating and coordinating vehicle. For instance, we subscribed to American Cybercasting Corporation's news feeds of *Associated Press Financial, California Management Review, Financial Times of London, Forbes, Investor's Business Daily,* and *Washington Times.* Using a single mainframe enabled easy maneuvering between these applications.

I required student groups to engage in two applications of the Internet. For the first, work groups formed to scan the virtual business environment in search of information relevant to two different issues covered in class. Students used Internet resources to go on scavenger hunts and get information. The groups then made a short and informal presentation in class and distributed their Internet reference sites. For the second class project, students had to investigate and report on a current issue, which required conducting a comprehensive literature search on the Internet. I expected them to include

interviews and unique data collections. They presented and wrote a position paper on their chosen topic at the end of the semester.

According to the now-famous saying from the film *Field of Dreams*, if you build it, they will come. Will they? Students did not participate as greatly as I hoped. My vision of eager students debating outside of class never materialized. Many composed their mail messages on their way to class, so their comments were rarely incorporated into the class discussions. They occasionally used the electronic bulletin board, but their postings rigidly answered questions asked instead of creatively taking new directions or raising additional issues. Their formal class presentations had ample data, but overall, they failed to discover interesting information and contributed little to our knowledge.

My disappointment is not limited to students, however. I opened guest accounts and invited local businesses, several alumni, and faculty colleagues to participate in our on-line discussions. Although many were asked and some expressed interest, only a few actually participated. We also wound up with a virtual student—one of our part-time students who was close to completing degree requirements was transferred to his international company's out-of-state headquarters. (He has yet to complete the course requirements 3 years later.) Although enrolled students will grudgingly incorporate the information technology if required to do so, other valuable contributors will not unless they have a reason to learn and use it. Such resistance may no longer be a problem given the Internet's widespread use and understanding, but only a compelling application will truly draw participants to meaningfully incorporate the available technology.

I taught one of the three sections offered in the fall 1994 semester and again in the fall of 1995. Two important changes occurred during this period. First, the World Wide Web became tremendously popular, replacing file transfer protocol (FTP), telnet (remote terminal access), and gopher.[2] Search engines were readily available, and students became more sophisticated and proficient in using the Web. Second, the School of Business invested heavily in multimedia equipment so that the 1995 course included computer-generated, projected presentations by both instructor and students alike, as well as the ability to conduct Web searches in class.

These two sections had a total of 48 students. The class's average age was 30 years at the time students were enrolled in the course; 56% were men. There was an exact split between full-time and part-time students, and about one fourth majored in management information systems full-time. There were no significant differences for any of these demographic characteristics, nor were there any consistently significant patterns of who used the Internet

or their attitudes toward the technology. Similar to findings by Leidner and Jarvenpaa (1993), the students broadly fell into one of two distinct clusters: They were either enthusiastic or tolerant toward the approach.

What Happened?

There are many ways to assess their course experiences. I perused the results of their Internet searches and examined the VAX Notes postings. Also, my I-Way handout was a rudimentary introduction and overview of the Internet. It discussed some basics, provided specific locations pertinent for the course, and also requested students to keep a diary of difficulties they experienced. In addition, a questionnaire provided their feedback, including an open-ended commentary that asked them to report on their experiences using the Internet. The university also requires formal course evaluations at the end of the semester.

INTERNET SCAVENGER HUNTS

I have vivid impressions of their Internet searches. As is true of most assignments, performance varied significantly. The first semester, students found numerous documents and data at gopher sites and engaged in discussions at usenet newsgroups. However, they printed these verbatim and at length but without offering any analysis or interpretation. The second year students eliminated printouts and reports by presenting their Web sites using the new audiovisual equipment. Rarely did either class distill relevant information or thoroughly analyze the ethical issues. My instructions might not have been clear to them. Although some students might benefit from more direction, this could defeat the purpose of discovery and might not be preferable to conducting conventional library search. Another failure is that the virtual groups met electronically and shared information without having to travel, but they rarely worked as real teams.

Perhaps I had unrealistic expectations of students cooperating as I maintained traditional course evaluations (exams, papers, class participation) that reward students for being individual performers. Considering how easy it has become to retrieve information, I recommend pushing for thorough analysis and meaningful recommendations. This means forcing more diverse opinions and filtering the abundant data. Also, limit presentations to about 5 minutes to reduce random browsing and to force decisions, and tell students that not every site must come from the Web or be shared with the class. Notify them that not every group member must participate in the class presentation, and some groups can post their analysis electronically to the class. In either

event, all groups must provide hard copies and handouts that summarize their findings and include an annotated bibliography of just the most useful sites.

CLASS ELECTRONIC BULLETIN BOARD

This computer-mediated conferencing system lets you conduct on-line meetings. Students were able to communicate conveniently and economically, anytime and anyplace (asynchronous), without costly or time-consuming meetings. We held open forums where students could discuss any topics they chose. I also helped them prepare for each class session by posting miscellaneous assignments, lecture notes and outlines, questions to consider, Internet search challenges, opinion polls of current issues, suggested group activities, current controversies, class announcements, requests to give and receive feedback, and similar items.

Even though this provided students many opportunities for involvement, I accounted for nearly twice as many postings as all students combined. Startlingly, 18 (38%) of the students did not post a single item. The 29 students who did participate typically posted four or five items and each covered only several of the 13 possible topics. Moreover, some postings occurred before the scheduled class meeting and others came after, sometimes during a single burst of activity. This disproportionate participation is consistent with general research on college classes. Even when the final grade requires class contribution, only a few students are typically active and dominate the class discussion. Because I could not directly observe e-mail usage, students might have engaged extensively in private communications. The only way to ascertain this is by asking them.

STUDENT FEEDBACK

In spite of our mutual frustrations, students considered these experiences enormously successful (see the survey results in Table 1). Their written comments fell into several categories. Some students expressed concern about the dual nature of the course—using a complex and interesting method to teach complex and interesting content. According to this view, it is hard to pinpoint specific ethical issues on the Internet. Others believed that although the Internet was a useful resource to learn about, this class was not the best forum because it required a lot of time to research different topics each week. So although the Internet was interesting to explore and admittedly a useful tool, they did not want it required as part of a business ethics course.

Many recognized that the Internet would become increasingly important in future years and felt that using the Web was good practice for things to come, especially as it is becoming popular in business and should increase in

TABLE 1
Student Survey Summary[a]

Variable	*Cases*	*Mean*	SD
Meeting course objectives (1 = *strongly disagree*; 5 = *strongly agree*)			
Understand. Overall, I better understand sociopolitical issues and ethical dilemmas because of the class.	42	4.33	.69
Evolve. The Internet helped me see the evolving role of business in a changing environment.	42	3.83	.88
Sensitivity. The Internet helped me broaden my sensitivities about the social context of business.	42	3.48	.89
Relation.[b] The Internet helped me learn the complex relationships between business, government, and society.	42	3.29	.83
Standards. The Internet helped me understand the ethical and moral standards for business practice.	42	3.07	.92
Using the Internet (1 = *insignificant*; 5 = *excessive*)			
Gopher. On average, the time I spent using Gopher was:	42	3.19	1.09
Participation. Because of the Internet, my participation in this class compared to other classes was:	42	3.17	.79
E-mail. On average, the time I spent using e-mail was:	42	3.00	.83
VAX Notes. On average, the time I spent using VAX Notes was:	42	2.88	.86
NEWSREAD. On average, the time I spent using the news reader was:	42	2.66	1.08
Reflections about the Internet (1 = *strongly disagree*; 5 = *strongly agree*)			
Future. I intend to use the Internet to find information in the future.	42	4.40	.70
Pleased. All things considered, I am pleased about what I learned about the Internet.	42	4.33	.72
Specific. Assignments on the Internet should be specific and direct.	42	3.12	1.27
Novelty.[c] The Net lost its novelty as the semester wore on.	42	3.00	1.31
Evaluate. Student evaluation should be based on their use of the Internet.	42	2.55	1.15
Class assignments, discussions, and lectures (1 = *strongly disagree*; 5 = *strongly agree*)			
Cases. Overall, the cases and their analyses were worthwhile.	42	4.02	.78
Student participation.[d] Compared to my other classes, the level of student participation was higher.	42	3.93	1.00
Assignments. Overall, the class assignments were worthwhile.	42	3.93	.68
Readings. Overall, the readings were worthwhile.	42	3.76	.96
Outline. Having the lecture outline on the VAX Notes was worthwhile.	42	3.21	1.26
Presentations. The students presenting their Internet search was valuable.	42	2.86	1.18
Learning. Overall, learning has nothing to do with my Internet participation.	39	2.79	1.22

a. Boxed by .05 level of statistical significance.
b. High relation cluster = 3.8 versus medium relation cluster = 3.0.
c. Kids age group = 3.4 and baby boomers age group = 3.6, versus yuppies age group = 2.4.
d. Male = 4.2 versus female = 3.6. Part-timers = 4.1; management information systems majors = 4.3; finance majors = 4.3 versus human resource majors = 2.3.

importance. The biggest barrier to successful use is that not everyone owns a computer and modem or has easy access to them, and university computer room hours limit access, particularly for part-time students. The popularity of the Web also raises our expectations of what is readily available. In reality, it is extremely fluid, with nothing at some locations, sites under construction, or sites moved without providing a forwarding address. Some also complained about the abundance of "junk." It is also unreliable, with much of the information inconsistent and data conflicting between sites. Several students suggested including an Internet introduction to provide more explicit information to those who are not computer literate or familiar with the university's resources.

Lessons Learned

The approach was very rewarding for me for many reasons, not the least being the overwhelmingly positive student comments and some of the best formal evaluations I ever received. Numerous factors affect results, however, including student characteristics, such as their aptitude and attitude, motivation and maturity, experience, ability and effort, amount of control, and personality and learning style. Also important are class dynamics, such as the extent of interaction between the instructor and the students and among the students. These depend on the nature of the task or decision; the instructor's skills, style, attitude, and course objectives; the course's position relative to the rest of the curriculum; and the institutional infrastructure, capabilities, and culture. Here are some reflections on my experiences.

1. *Need-to-know basis.* Although the Internet is a useful resource that students should know about, it should not be taught as part of a class that requires a lot of time to research different topics each week. Students should know the basics as a prerequisite for applying the Internet in a content course. This is a curriculum issue that a school's faculty must resolve given its own unique circumstances. At the same time, students should not rely on any single protocol (e.g., the Web), search engine (e.g., Yahoo!), or location. They should instead appreciate the variety of tools available and be proficient in navigating the entire I-Way.

2. *What's the point (and click)?* Decide why you want to use the Internet in your class. Unless you have a clear purpose in mind, students will be confused about their responsibilities. Many course objectives are met very well without resorting to computer technology. If your course is complex enough, then do not burden your students with learning about the Internet. If they must apply the Internet, then specify how it must be used.

3. *Measuring up.* It is a truism that people behave according to how they are measured. It is difficult to motivate students who play the point accumulation game. Many students will undoubtedly participate on the Internet because it is required for a grade rather than for enjoyment, ease, and enhancement of their learning. Make specific Internet applications a fixed part of their grade or assign work that requires using the Internet. Be careful, however, about receiving an excessive volume of postings from students who hope their use will correlate with good grades.

4. *Show and tell.* We can set specific goals and give regular feedback, but the most powerful way to establish class culture and set norms is to act as role models who set examples, such as by citing sites on our own class materials. The ubiquitous "http://www" so prevalent on the bottom of print ads and television screens should be prominently displayed on our overheads and in our documents, and we should demonstrate the usefulness of the information to whatever we are teaching.

5. *Location, location, location.* Provide explicit instruction on where to go and how to get there. One way is to develop a detailed opening assignment that specifies the objective and provides useful information sources for completing the work. One of the results of my own experiences was developing a Web page for this course that outlines the course content, accumulates learning, shares resources with others, and encourages dialogues with people at other locations.[3]

6. *Stop and go.* Much of the Internet is simply inconvenient to use. Common messages include "cannot connect," "could not retrieve," and "forbidden." Sites can disappear as quickly as they are designed, with considerate Webmasters leaving a link behind if it is moved to a new location. Also, do not assume students can easily access the Internet. Not everyone has a personal computer and modem, campus administrators (as well as employers and other organizations with Internet access) might arbitrarily establish policies limiting its use, and the current infrastructure is unable to handle the volume of traffic. For these reasons, prepare for frustrated students who spend a lot of time on futile searches.

7. *My way for the I-way.* It is unrealistic to believe you can anticipate every Internet application for your course. You can, however, demonstrate how different approaches yield different results. As the course progresses, provide students with problems they must solve individually or as teams, and let them discover and share their own Internet applications. These projects should be more open-ended than earlier ones, and be prepared for surprising discoveries.

8. *Relevance.* Probably our most difficult task is to develop assignments and materials that properly use the Internet as a tool without relegating

learning as subordinate to this technology. You will not always obtain specific information on the Internet for your course. Be prepared to scale down requirements or lower student demands if the information does not further your teaching objectives.

9. *Can we talk?* Given the Web's ease of use, students spend an inordinate amount of time getting documents and data from numerous sites and ignore sharing ideas and opinions. For instance, students do not see the value of electronically chatting when they can meet or telephone each other. These communications tools let students fully exchange diverse opinions without being intimidated by classmates, and they open up a larger number of people with whom to converse. Encourage their use so students exchange information. One way of doing this is to create explicit discussion groups, each with its own designated student-facilitator.

10. *Course design.* Decide on the type and amount of direction and structure you want to provide students. Ideally, students will be responsible for taking ownership over their own learning. Expect to spend time in the beginning of the course providing sufficient direction, but try to eventually turn the course over to the students.

There are many unresolved issues worth studying further. One is class size. Some fear Internet classes are for the masses, but I believe about two dozen students is optimum. We need more research here. A second issue is how directive we should be without hindering creativity and exploration. Students might have misplaced motivation to learn about computers rather than concepts—or at the expense of creativity. It is worthwhile to study when instructors should intervene, facilitate, or coach. Third, it is unclear if this approach works in other contexts. More research needs to be conducted in different companies and countries as well as universities and programs. Fourth, we do not know how important the instructor's role and teaching style are. Comparing our colleagues is necessary as well. Similarly, there are numerous student characteristics other than the simple demographics this studied examined. These should be examined to determine their role. Sixth, the social setting is important in creating a learning community. So, a final research issue is to study the interpersonal dynamics that occur in these virtual groups and classes as well as the nature of the course and materials.

In closing, information is power to those who know how to get onto the information superhighway. Future business managers must understand what information is available on it, how to access it, and how to use it. We are responsible for creating a learning environment, and today's information technology can give students hands-on experiences in a virtual organization and even create their own learning environments. In spite of the potential that information technology and personal computers promise, basic changes in how faculty design and deliver courses have yet to materialize. Education technologies are not ends in themselves but complement other pedagogies. They can help us develop an effective educational learning experience if we keep things in perspective and use the Internet as one of many tools—not as a panacea.

Notes

1. That is, business schools on the information superhighway.
2. The Internet enables your computer to run programs or gather information from remote computers. File transfer protocol (FTP) permits users on one host to copy a text file, software, data, and other information from remote hosts. Telnet provides access to on-line information, such as databases, computerized library card catalogs, or weather reports. Gopher offers a text menu interface organized hierarchically to find information at other sites. All three are being replaced by the World Wide Web, a graphical and Windows-based browser that uses "hot words" to retrieve information at various sites, including graphics, sound, and video. The Internet encompasses all of these protocols as well as e-mail.
3. The URL for this Web site is http://www.albany.edu/~pm157/teaching/ethics.html.

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AN INTRODUCTION TO A MODERN ACADEMIC BUSINESS LIBRARY

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A serious lack of understanding surrounds the function of a modern academic business library. Its primary mission is to support faculty research, enhance curriculum offerings, and train business students in the latest advances in the myriad of information delivery systems. This situation is complicated by the fact that technology is changing on virtually a daily basis, with transmission speeds getting faster and faster. Add the computer's capacity to store gigabytes of information, and one is faced with more confusion about which resources or systems to use to answer specific information needs.

This article will attempt to enlighten the user about many of the new outstanding resources available for research and learning. Today, people think all information is available on a computer. This is hardly the case. Books still hold 50% of the answers, with CD-ROMs and on-line services supplying the remainder. The world of the modern library is further complicated because so much information is in today's electronic environment. The question is which tool to use. The card catalog is only available through a computer, the index is in electronic format only, and many directories are now only available through a CD-ROM workstation. Library patrons need computer skills even to function in today's library environment. They also need some understanding of the complexity of today's systems. All reference questions become a form of either simple or complicated negotiation. As Lewicki, Litterey, Minton, and Saunders (1994) said in the opening pages of *Negotiation*,

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