

# **eLearning Research in the US: Challenges and Opportunities**

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## **Background**

This current presentation grows out of earlier discussions at two Worldwide Universities Network (WUN) meetings in Orlando, Florida, in 2003 and 2004. The proposed research agenda and identified needs are based on an extensive (but hardly exhaustive) review of the literature and discussions with faculty, students, and administrators engaged in eLearning. The examples of the current research context in the United States are drawn from three research dissemination venues: the 2004 Distance Teaching & Learning Conference, the 2004 Sloan-C Summer Invitational Research Workshop, and the four issues of *The American Journal of Distance Education* published in 2004. Although other venues could have been selected, I believe that these three illustrate important characteristics of US eLearning research and researchers worth noting and discussing. Finally, I have attempted here to provide some insights into the nature and characteristics of eLearning research in the US, rather than to provide a comprehensive review of research results.

## **Developing an eLearning Research Agenda**

Writers and conference planners have used a variety of thematic categorizations for reports and research related to eLearning. The categories of the tentative agenda proposed here are influenced strongly by my position within a major public research university and the challenges it has faced since 1997 in “mainstreaming” eLearning into the core functions of the institution. However, examination of the literature shows that the questions posed, while in a few cases specific to the public research university, have broader applicability, as well.

## **Issues of Institutional Policy and Management**

A number of organizational issues and challenges become prominent with the introduction of online teaching and learning into higher education. Research into the implications of this integration, particularly as it relates to institutional policy, is necessary to provide a firm basis for planning, decision making, and effective implementation.

Policy analysis should provide insights that support progress towards an institution’s vision and mission. Thus, research in the area of policy analysis should focus on several areas:

- Current policies, both those specifically focused on supporting online learning and corresponding policies for resident instruction
- The extent to which existing policies support the integration of online learning into the institutional mainstream
- Changes and additions to the current policy framework necessary to support and guide the mainstreaming of online programming
- The institutional environment—the beliefs, values, expectations, and norms, that is, the culture—within which policies are developed, implemented, and accepted or resisted.

Organizational areas of focus for policy research related to online higher education include finance, intra-institutional competition, faculty support, and quality assurance.

### Finance

Fiscal integration is a key element in the mainstreaming of online higher education. What is the range of institutional financial structures for supporting and integrating technology-based programs into higher education? What changes in existing business structures and levels of financial support will facilitate the integration of online and traditional programming? What sources of funding are extant and projected? Is there a relationship between source of funding and sustainability of programs? Cost-effectiveness is another important financial aspect of online teaching and learning. What institutional budget structures and policies are necessary to realize cross-institutional efficiencies?

### Intra-Institutional Competition

The introduction of online teaching and learning into the higher education context has resulted in intensified competition not only between institutions, but also between campuses within multi-campus systems. What are the governance and fiscal issues related to service areas, student credit hours, and course ownership that must be resolved? How can the various, often-conflicting stakeholder needs and cultures be balanced to ensure the social and fiscal stability of both the overall institution and its constituent campuses?

### Faculty Support

Two important policy foci related to faculty support include workload/compensation and institutional rewards/advancement.

- Recent research on online workload suggests a widespread perception among faculty members that their workload increases in the online environment, with concomitant negative effects on satisfaction and/or participation. However, to date this perception has been based almost completely on anecdotal evidence, and the little empirical evidence available is conflicting. How real is the perceived increase in workload in the online environment? What categories of tasks

contribute to the real or perceived greater workload? What strategies are faculty using to manage workload? Compensation issues are closely related to workload. Several studies report that lack of adequate incentives and compensation are a deterrent to participation. What is the appropriate institutional response in cases of documented heavier workload, especially given contextual imperatives for increased institutional productivity and a better “bottom line”? What incentives can institutions offer that will encourage innovation in pedagogy without creating conflict and equity issues between participating and non-participating faculty members?

- The common wisdom in the area of institutional rewards/advancement is that participation in online learning is counterproductive to professional advancement since it takes time away from other faculty activities that are more highly valued by the institution. However, online programming is increasing at the same time that institutions are considering and, in some cases, responding to calls for increased institutional engagement and a more inclusive assessment of faculty scholarship. How widespread is such reassessment and what concrete changes in institutional reward/advancement structures and policies have been implemented? What is the effect of such policy change on the participation and satisfaction of faculty members in online teaching?

### Quality

Assuring the quality of technologically based educational programs is a major concern in higher education today. Yet quality is a difficult concept to define and, therefore, to prescribe and measure. Recent publications and conference reports have suggested appropriate categories of quality (e.g., faculty training, student support, etc.). However, most have either resulted in overly general guidelines and minimal expectations or failed to move beyond traditional forms and structures to recognize the new and expanded possibilities offered by such programs. As a recent Pew Roundtable participant noted, “We in higher education are willing to ‘settle’ way too soon, accepting a level of performance that is erratic. There is no concept of ‘world class’” (cited in Distance Learning Policy Laboratory, 2002, p. 10). What does quality mean in today’s changing higher education context, particularly as it relates to technology-based education? Research related to the quality of technology-based educational programs could focus on a number of areas:

- *Definitions of quality.* How are institutions defining quality in relation to these programs? Are definitions structurally, process-, or outcomes-based? Do quality definitions for technology-based programs go beyond parity with traditional programs?
- *Approaches to quality assessment.* What evaluation/quality assurance approaches are being employed? Are approaches based on generalities or specific performance indicators? Is there congruence between institutional strategic goals and the foci of quality assessment activities?
- *Quality maintenance vs. quality improvement.* Is quality being viewed from the perspective of maintaining an acceptable status quo of educational value or as

- being “about variance...about managing the downside and gradually raising minimum standards as part of a continuous process to improve academic processes and outcomes”(Tucker, 1997, p. 1)?
- *Responsibility for quality assurance.* Eaton (2000, p. 1) identifies shared governance and the academic authority of the faculty as elements of “a small set of core academic values...central to the history and tradition of higher education.” These values are even more directly central to faculty members’ sense of professional identity and responsibility. Although, as Eaton further notes, “distance learning...challenges these values,” it is by no means a “given” that faculty have accepted this challenge uncontested. While the literature suggests that faculty members’ satisfaction with the institutional adoption of and their participation in online learning is closely related to their maintaining responsibility for academic quality control, it also gives evidence that some institutions are implementing separate governance structures for online programming. What institutional policies govern online program quality? Are such policies developed through standard institutional processes? Does the faculty role in quality assurance differ between traditional and online programming?
  - *Best practices.* What are often referred to as quality indicators or “industry” benchmarks are actually overly general categories or recommendations difficult both to recognize and to measure. What best (not acceptable or minimal) practices in quality assurance/ management are extant in online higher education today?

### **The Faculty Experience and Pedagogy**

A major determinant in the ultimate success of online higher education programs will be a strong faculty commitment to teaching in this new environment. To date, faculty members have reported benefits that make this new environment a satisfying addition or alternative to traditional face-to-face instruction. However, ensuring faculty commitment over the long term and for the increasing numbers of faculty members who will be needed to participate will depend on a number of factors. Several policy-related factors were discussed above. Other factors, including changing roles and faculty resistance, can be fruitfully approached from the perspective of professional identity and personal satisfaction.

#### Changing Faculty Roles

The advent of technology-based higher education has suggested to many observers the need for changes to the traditional faculty role, particularly in terms of the “unbundling” of that role, which some see as the appropriate response to a more complex and “engaged” environment. This issue is complex and highly charged, and reflects a tension between institutional concerns about productivity and efficiency and faculty concerns about self-determination, professional identity, and personal values. What aspects of the faculty role do faculty members themselves believe need to be changed? What aspects of change do faculty members believe result in “de-professionalization?” How do

perceptions differ between faculty and administrators? At the level of practice, what has been the actual experience of faculty members who are filling new or changed roles? What are the experiences and relative concerns of those in the roles of course author and course facilitator? What differences, if any, in faculty satisfaction or student outcomes result from different arrangements of faculty roles?

### Faculty Resistance to Online Teaching

Faculty resistance to both online education in general and to personal participation in this form of teaching and learning has been frequently discussed as a major barrier to the mainstreaming of online education (Thompson 2002). Most researchers have focused on structural factors such as lack of technical support, inadequate incentives and/or compensation, and traditional institutional reward systems. While these are indeed potent barriers, a few observers are suggesting that a more fundamental source of resistance may be found in philosophical, psychological, and “cultural” factors, particularly as these relate to differences between the faculty and administrative cultures. What are the philosophical, psychological, and or cultural bases for faculty resistance? What differences exist in faculty and administrative perceptions of the sources of resistance? What are appropriate administrative responses to faculty resistance? What has been the relative success of different approaches?

### **The Student Experience/Student Outcomes**

Positive student outcomes represent the ultimate goal of all educational programming, including technology-based higher education. The many aspects of this topic, as well as the complexity and interconnectedness of factors contributing to it, provide numerous foci for research.

### Course Design and Support Factors in Enhanced Student Learning Outcomes

Online courses can benefit from the powerful communication and presentational features of a variety of technologies and technology combinations. They also introduce new student instructional and non-instructional support needs. What design factors are associated with positive student learning outcomes? What is the role of dialogue and community in eLearning? How do the need for and effect of interaction and community differ in relation to different types and levels of content? Different student populations? What support needs are characteristic of online students in general? Of particular populations of online students?

### Comparison of the Needs and Experiences of Adult and Traditional-aged Students

Demographic studies indicate that traditional-age students represent a steadily decreasing proportion of the higher education population. This situation argues for research on both the distinctive characteristics and needs of these different populations as well as the commonalities imposed by characteristics of the eLearning environment. Much of the

eLearning research to date has focused on its impact on adult students, who are known to represent the greatest proportion of online students. However, given the increasing emphasis on blended programs in which traditional students will take a significant proportion of their courses on line, it is important to study the specific needs and characteristics of students as distinct populations, as well as the dynamics within multi-generational online “classrooms.”

### Factors in the Retention of Online Students

It is “common wisdom” that persistence and retention rates of distance students are lower than those of traditional students. Yet the data on which this perspective is based were derived primarily from earlier less interactive forms of distance education. The widespread adoption of online learning necessitates new approaches to questions of persistence and retention, especially in relation to the different populations of online students. What does retention mean in the online environment? Are there differences in retention rates between those in different levels of study or types of program? What design, delivery, and/or support factors are related to higher levels of student retention? Is community a factor in retention? Do answers to these questions vary by level of study, type of program, or student characteristics?

### The Meaning and Measurement of Student Needs and/or Satisfaction

An increasingly competitive higher education context has resulted in an intensified focus on the student as consumer or customer and on meeting student needs. However, as Spangehl (2000, p. 5) points out, “There is much misunderstanding of what it means to satisfy a student’s needs.... What education strives to satisfy is not the student, but the student’s lifelong need for knowledge and skills.” How do institutions define student needs, and how do they balance them in relation to the needs of other higher education stakeholders (faculty, institution, employers, society, etc.)? How do we design courses to meet the conflicting needs of some students to study independently and others to study in community? What assessment approaches provide actionable data? What performance standards can be developed and shared across higher education to provide the basis for both informed student decision-making and continuous quality improvement?

### Relationship of Faculty Experience to Student Outcomes

The experience of faculty members and students online are often treated as separate phenomena, yet anecdotal and more formal evidence suggests that faculty members believe that there is a close relationship between factors in faculty satisfaction and student satisfaction/learning outcomes. Of particular interest is the role and nature of interaction and community in the satisfaction of both instructors and students. What factors in the faculty experience are related to positive student outcomes? What are the pressure points, where maintaining the satisfaction of the two groups seems to suggest conflicting approaches (e.g., students’ need for 24/7 access to instructors’ and instructors’ sense of unmanageable workload)?

## **Context & Ethical Issues**

The institutional context within which eLearning takes place both influences and is influenced by this innovation. Many issues relating to the impact of eLearning on the institution and the changes necessitated by its adoption remain unexamined.

### Institutional Context: The Challenges and Management of Institutional Change

The success of an innovation is dependent not only on the characteristics of the innovation itself, but even more importantly on how the change is introduced and implemented. The introduction of online teaching and learning may well be “one of the most significant institutional challenges facing higher education.” However, the challenge is not in the technology itself, but in the changes necessitated by its incorporation into a traditional university culture characterized by complex and firmly established norms and structures. As Noblitt (1997, p. 4) suggests, the current emphasis on technology masks a “mythology dominating technology management”: the idea that “it is all about technical issues. It can be argued that it’s all about managing change – technical, social, pedagogical, political, and financial.”

How can institutions prepare faculty, staff, and administrators for the institutional and personal changes resulting from the introduction of technology-based programming? Is change meant to be incremental or revolutionary? What systems and policies are necessary to support either path? Will change be initiated and managed from the top down or the bottom up? Who decides on the questions and who provides the answers? That is, Who *is* the ‘top’ and who the ‘bottom’? This last question opens up a number of further research questions relating to the competing subcultures that make up a university community. How can the issue of change within institutional communities be framed and managed not from the perspective of protecting the rights, privileges, and/or responsibilities of one internal subculture against another, but rather from that of protecting the future of the non-profit higher education enterprise itself? What structures, policies, and processes can be developed to enable and encourage all stakeholders to work toward a creative melding of an institution’s academic traditions with an appropriate level of attention to its place in the market?

### Ethical Issues

Ethical concerns can be identified for many of the topical areas presented above, as well as for other areas. Particularly pressing are the ethical issues related to access, integrity, and changing faculty roles. Although it is understood that these issues are inter-twined, they are presented separately below as an initial step in identifying potential research questions.

Access is a way or means of entry, and for online educational programs the access point is a computer and the Internet. Many students report high levels of satisfaction with this entryway to educational opportunities and resources. Yet we know that online education

does not increase access for all students (Bates, 1999; Tait, 1999). Some potential students, because they have no access to a computer or Internet service, or because their technology platform is inadequate, are effectively shut out of online programs. Others may be excluded because the content area they need is not available via online programs as a result of institutional choices related to mission, market size, and/or financial viability. Still others, such as some resident students at traditional institutions, may feel themselves to be unwillingly caught up in the transformation of familiar ways of learning and the implementation of seemingly difficult-to-negotiate approaches, especially when institutions do not operate from a consistent technology base or provide appropriate orientation or support. For such students, the requirement that they gain access to their educational programs via a computer and separate from their instructor and peers may decrease their sense of accessibility to educational opportunities as well as their satisfaction with educational experiences. Several research questions relating to the ethics of access are suggested: For whom has access increased and for whom has it decreased? Who are the “winners” and “losers,” and how does this result relate to institutions’ legitimate (that is, publicly articulated) missions? Are students being adequately prepared and supported in the convergence of traditional and online instruction?

Online learning raises few *new* concerns relating to integrity; however, it brings to the fore issues that, while of concern in resident instruction, become more apparent or potentially damaging in the online environment. Representative concerns relate to the institution, to students, to faculty, and to researchers.

- *Institutional integrity.* A primary concern related to institutional integrity is the motivation of institutions to offer online programs and their commitment to assuring the quality of such programs. Critics have suggested motivations including fear of competition, inappropriate focus on efficiency and revenue at the expense of program quality and student welfare, and change for the sake of change. Motivations articulated by institutions themselves, however, are more positive, including provision of access to more students and improving program quality (National Center for Educational Statistics, 2003). Useful research questions to pursue include What goals for online programming are articulated in institutions’ strategic plans? Are they the same as for resident instruction? Does the implementation of such programming reflect these goals? Specifically, do institutional structures and resource allocations reflect commitment to high-quality online programming? Related to motivational questions are questions related to the marketing of online programs: How are online programs marketed relative to traditional programs? What aspects of the program are stressed, and with what result? Are programs presented fairly or are advantages highlighted and disadvantages downplayed? Do institutions give potential students the information they need to make informed choices about the appropriateness of online programs for their particular situations and educational needs?
- *Student integrity.* The question of student integrity in the online environment has received considerable attention. Two key concerns are assurance of identity and plagiarism; together, they represent a serious obstacle to faculty acceptance of online

education. Supporters of online education note that while both of these problems occur in face-to-face instruction, that environment has traditionally accepted that a certain level of tolerance for this type of risk is necessary. Is the problem more widespread in the online environment? What “best practices” for security have institutions implemented to ensure student identity? Are there forms of assessment less amenable to cheating that have been successfully used in the online environment? What steps can institutions take to promote a culture of integrity that minimizes the threat of misrepresentation or cheating on the part of all of its students?

- *Faculty integrity.* Educators have sometimes been less than rigorous in adhering to rules for obtaining copyright permissions, even under the broad and relatively easy strictures of the “fair use” principle developed to guide use of materials in the traditional classroom. Use of materials in the online environment, however, is more strictly regulated by law, making both understanding and compliance with relevant laws a major faculty integrity issue. As the American Library Association (2003) notes,

Both the meaning of fair use and the details of the specific statute (Section 110(2)) become much more rigorous when the materials are uploaded to websites, transmitted anywhere in the world, and are easily downloaded, altered, or further transmitted by students and other users—all posing possible threats to the interests of copyright owners.... Make no mistake: While the TEACH Act is a major improvement over the previous version of Section 110(2), the law still imposes numerous requirements for distance education that reach far beyond the modest limits in the traditional classroom.

Initial research questions might relate to the extent of faculty knowledge in this area, to actual faculty practice, and to institutional responsibility for educating and supporting faculty in proper copyright procedures.

- *Researcher integrity.* Roberts (2000) notes that the online environment is characterized by “unique and potentially harmful environmental factors,” an awareness of which may not be reflected in existing codes of ethical practice for research on human subjects. Factors such as the dis-inhibiting effect of the seemingly anonymous (or pseudonymous) environment, an increased danger of researchers objectifying their “invisible” research subjects, and the difficulty of obtaining informed consent from members of online groups whose composition changes constantly are representative concerns. Although some guidelines and protocols will be transferable from traditional research contexts into this new environment, in other cases appropriate methodologies and approaches may need to be developed from the “bottom up” by researchers as they explore and operate in this new environment. Related research questions include What are the risks and benefits associated with research in online communities? How do these differ from research on traditional educational communities? How are the concepts of “public” and “private” different in traditional and online educational communities, particularly in terms of dialogue and community interactions? What are the implications of these differences for

eLearning research? What changes have institutions made in their human subjects research policies to reflect differences?

### Faculty Roles

An earlier section of this paper noted faculty concerns related to de-professionalization as their roles change in response to the implementation of technology-based instruction into higher education. Klassen and Vogel (2001) note that some faculty members believe they are being “coerced into using an unproven approach. A pressing ethical question is “To what extent should faculty be *required* to adopt new ways of teaching, especially when new methods and formats fundamentally change the character of their work?” Related research questions might focus on the actual extent of “unbundling” of the faculty role across institutions, the degree to which faculty members have a choice in/control over such decisions and processes, the responsibility of the institution to provide adequate support for changes in roles, and relative levels of faculty satisfaction in different situations.

## **eLearning Practice and Research in the US**

Current eLearning research is less than completely congruent with the agenda proposed above. To understand some of the reasons for this situation it will be helpful to briefly review the history of this innovation within higher education and to look at several examples of research dissemination venues that both reflect and shape research practice and reporting in the US.

### **Distance Education as a Marginalized Activity**

For years, distance education in the United States was a relatively minor, often marginalized, activity carried on and promoted by a small group of educators dedicated to broadening access to educational programming to unserved or underserved populations of students. These educators used a variety of media—e.g., print, audiotapes, videotapes, audioconferencing, videoconferencing, satellite broadcast, and, most recently, computer conferencing—and media combinations to offer programs to students who, because of barriers of distance or personal circumstances, were unable to participate in educational programs at traditional institutions.

Because of the marginalized position of distance education activities, decades of research and evaluation focused on demonstrating that distance education programs were “as good”—that is, that students learned as much in them—as resident instruction programs. The primary approach used was the media-comparison study, which pitted classroom-based instruction against technologically mediated instruction. Comparable outcomes were documented in hundreds of such studies. Thompson and Irele (2003, p. 568) have characterized distance education research and evaluation during this time as “defensively

focused on presenting data that would allow its continued existence, if only on the margins.”

### **eLearning as a Transformative (or Disruptive) Phenomenon**

With the advent of the Internet and the World Wide Web, the practice and research situation changed dramatically. Thanks to the power, reach, and interactive possibilities of new communications and information technologies, distance education was “discovered” by traditional educators and institutions, who viewed it not as a maturation of earlier forms of distance education—with which few if any were familiar—but rather as a totally new phenomenon. The recasting of distance education as “on-line learning” or “e-learning,” resulted in rapid movement from the margins toward the mainstream of higher education. While some continue to perceive this movement as a threat, others view it a transformative promise of universal access and revitalized instruction. But whether as threat or promise, the once-obscure, little-known, and little-respected phenomenon of distance education, now eLearning, had captured the attention of the educational world (Thompson and Irele, 2003).

Because it is increasingly viewed not only as an alternative for non-traditional students, but also as an attractive alternative or enhancement for traditional campus-based students, interest—in some cases concern—related to this phenomenon has intensified. Transformation when viewed from another perspective is disruption. Highlighting this point, Judith Eaton, president of the Council for Higher Education Accreditation, has noted that distance education, “however unintentionally,” challenges the “core academic values...central to the history and tradition of higher education” (Eaton, 2000, p. 1).

While many suggest that such a challenge is long overdue, the rapid adoption of this largely unproven innovation has raised significant concerns about impact and quality that remain largely unaddressed. Research, of course, is a primary source of answers to questions of impact and quality. As Bates (2000, p. 198) points out, because of

the rapid speed with which new technologies for teaching are infiltrating even the most cautious and conservative of universities, and the lack of experience in the use and management of such technologies, the case for researching and evaluating the applications of these new technologies is obvious.

### **Program Descriptions/Evaluations, “How To” Reports, and “Best Practices”**

Although the rush to move this little-understood but potentially transformative educational phenomenon into the mainstream of higher education has resulted in increased demands for research- and evaluation-based knowledge and information, such demands have tended to assume a reflexive application of research and evaluation practices commonly applied in traditional education. There has been little evidence of

attempts to either build on a foundation of prior distance education practice and research or explore the value of new approaches.

Indeed, partly as a result of the discontinuous paradigm shift represented by eLearning practice, the proportion of true research—whether traditional or innovatively structured—to other types of reporting is relatively small: Program descriptions and evaluations, “how to” papers, and “best-practice” reports have tended to dominate the literature. The later result—the best-practices approach—is perhaps inevitable in a new field, but still somewhat troubling given demands for reliable evidence of quality.

In any new area of practice, practice tends to outstrip theory building, research, and policy development (King et al., 2000). In other words, new practices are introduced and publicized well before the research that can validate their effectiveness and the policies that can guide, monitor and control their impact. In the most positive situation, this result can benefit the field by allowing good practices to quickly become established and to serve as models. On the other hand, it can also allow less-than-ideal or poor practices to be adopted without regulation or oversight, to the detriment of students, institutions, and the field as a whole.

This effect can be exacerbated by the often-superficial process by which practices get labeled as “best.” The current context reflects too many examples of practices that are labeled “best” on the very limited experience of a single practitioner. Reports of isolated practices, even collections of such practices, cannot provide administrators and policy makers with the information they need to make informed decisions because they are not based on broader principles applicable across contexts and populations. The educational community needs to develop a rigorous approach to the concept “best practice” to provide a basis for a truly effective transformation of practice, as well as for theory building, research, and policy development.

Billings and Connors (nd) offer an approach to best practices that moves the process beyond the anecdotal and highlights the ideal relationship between research and best practices. They note that best practices are documented strategies or tactics, that they have been studied and perfected, and that they are supported by research results or other evidence. With particular reference to education, they observe,

Best practices in education are strategies used to produce good teaching and learning outcomes....A review of the literature indicates that although there exists a great deal of anecdotal data to support the need for change in education, there are few synthesis studies or integrated research reviews to sustain the transformation of this research knowledge into educational practices. (§ 2-3)

McClenney (2003) reinforces this view, noting that “reference to best practices in education quite clearly should be based on evidence that the practices produce improved results” (§ 16).

### **Three Research Communities**

Three research dissemination communities were chosen to illustrate some of the trends noted earlier in this paper. Although each forum has distinct, although somewhat overlapping, purposes, characteristics, and members, examining them in juxtaposition to each other provides at least partial insight into the eLearning research context in the US today. The topics represented in each forum were classified on the basis of the research foci in the proposed research agenda introduced earlier in this paper, and methods were classified on the basis of a modification of the system proposed by Lee, Driscoll, and Nelson (2004):

- Experimental/quasi-experimental research: examines the effect of independent variable on dependent variable
- Field research: case studies, ethnography, grounded theory, etc.
- Evaluation research: studies the impact of projects, programs, models
- Developmental research: studies the design, development and value of new models, processes, products, or techniques
- Survey research: analyzes the distribution and return of responses in non-experimental settings
- Mixed method research: combines research approaches
- Meta-analytic research: analyzes results across multiple studies

For each of the three venues I also noted which papers had particular relevance to the focus of this seminar: dialogue and communities of inquiry in eLearning.

### **Annual Distance Teaching & Learning Conference**

The Annual Distance Teaching and Learning Conference (a.k.a. the Wisconsin Conference) was established in 1985 by a small group of dedicated distance education pioneers to promote the scholarly study of distance education based in theory and research. It was the first US conference focused exclusively on distance education practice and research. In the last twenty years the conference has developed from a forum for networking and collegial exchange for members of a marginalized field to an event that in 2004 attracted over 1,000 participants from more than 500 organization and offered more than 150 concurrent sessions, workshops, advanced seminars, panels, keynotes, and course design showcases (About the conference, 2005).

The primary format for dissemination at the conference is the information session. Of the 77 papers in this category accepted for the 2004 conference, 17 could be classified as focused on eLearning research projects. Seven papers examined the faculty experience and pedagogy. Of these, four reflected developmental research, two reflected experimental or quasi-experimental research, and one reflected evaluation research. Student experiences and outcomes were the focus of six papers, two of which reflected developmental research, with one each reflecting evaluation, field, mixed-method, and meta-analytic research. Three papers focused on context and ethics, with one each using

developmental, field, and survey research. Only one paper, reflecting a survey research approach, focused on institutional policy and management issues.

Two of the papers in the faculty/pedagogy category focused specifically on the role of dialogue in the online environment. Rahimzadeh and Kolloff's (2004) developmental study examined the efficacy of a synchronous online role play and subsequent asynchronous reflective discussion in generating critical thinking among students in an online literature class. A quasi-experimental study reported by Boris and Hall (2004) explored the importance of developing a community of inquiry as a pre-requisite to critical thinking among students in an online class.

### **Sloan-C Summer Research Workshop**

Each year, the Alfred P. Sloan Foundation invites representatives of institutions to which it has made major grants for eLearning projects to a workshop to present and discuss their "practical" research on specific challenges of importance to online education. These summer research workshops result in the publication of annual volumes in the Sloan Consortium quality series and in online workshops that disseminate information and building knowledge in a wider audience. (Note: The Sloan Consortium, or Sloan-C, is a consortium of higher education institutions offering online programs that have been supported by the Sloan Foundation.) Participants in this invited workshop almost exclusively represent the "new wave" of distance educators, that is, those who practice eLearning not as an extension of earlier distance education teaching or administration but rather as a new activity.

The emphasis of the research reported in this venue is very much on "what works." This emphasis is further reflected in the Sloan-C "Effective Practices Database, within which are collected institutional examples of eLearning practice in the areas of increasing access, student support/satisfaction, student learning, faculty satisfaction, and cost-effectiveness. Although the Sloan Foundation has generously provided support for major new eLearning program initiatives and for the evaluation of those programs, it has been reluctant to support research that goes beyond a focus on the "what" questions to the more difficult, but no less essential, "how" and "why" questions needed to more thoroughly understand the eLearning phenomenon and its impact.

Five of the ten major papers presented at the workshop reflected actual research. Three of the papers were focused on institutional policy and management, reflecting this year's workshop emphasis on institutional eLearning business practices. Of these, two used field research approaches and one used an evaluation approach. Faculty experience and pedagogy was the focus of one paper reflecting evaluation research; the final paper was in the student experiences and outcomes category and reflected a mixed-methods approach.

One of the five papers focused on the role of interaction and engagement in an online business course. Theroux and Kilbane's (2004) study evaluated the effectiveness of a real-time case method, in which students interacted with representatives of the case

company on a continuous basis over the period of a semester, in promoting participation and satisfaction with the course.

### ***The American Journal of Distance Education***

*The American Journal of Distance Education (AJDE)* is an internationally recognized journal of research and scholarship in the field of American distance education. Begun in 1987, *AJDE* initially focused on the distance education technologies prevalent at that time: print, audio- and video-conferencing, and satellite broadcast. With the shift in emphasis to the Internet and the World Wide Web, the publication focus has likewise shifted to eLearning. Other changes evident over time are the increased focus on research articles as opposed to program reports and the higher level of rigor reflected in reports of research.

Until about six years ago, the authors represented in *AJDE* were largely a subset of those who participated in the Wisconsin Conference. More recently, they reflect a mix of “old-time” distance educators (who have subsequently embraced eLearning) and those introduced to the field with the advent of eLearning.

Ten of the twelve main articles that make up the four issues of Volume 18 (2004) focused partly or completely on eLearning research studies. One article focused on an institutional policy and management study that used survey research methods. Three articles focused on faculty experience/pedagogy studies: one used evaluation methods, one used field research methods, and one used survey research methods. Of the five articles reporting on studies of the student experience/outcomes, one reflected quasi-experimental methods, two reflected survey methods, one reflected field research, and one reflected a mixed-methods approach. Finally, one article focused on eLearning research itself as reported in four journals and used a mixed-methods analysis.

Four of the ten *AJDE* research article examined issues of interaction and community in the online environment, one from the perspective of faculty/pedagogy and three from the student perspective. Giguere, Formica, and Harding (2004) evaluated a course-design strategy for promoting asynchronous interaction and discussion within large groups of participants. Molinari’s (2004) grounded theory study focused on the role of social communication in an online group problem-solving activity. Two studies examined collaboration in the online environment. Rose (2004) compared the influence group structure—collaborative or cooperative—on the productivity of students in each group, and Belanich, Wisher, and Orvis (2004) evaluated the effectiveness of a Web-based tool for student collaboration on student performance.

### **Trends**

Reviewing the group of research studies representing the three communities leads to several generalizations that are presented as quite tentative, given the small numbers of both venues and papers involved. First, faculty and student issues seem to receive the

bulk of attention in the studies examined (11 and 12, respectively out of 32), which is perhaps not surprising since these groups have traditionally been seen as the “key players” in higher education. Both institutional policy and management (with five studies) and context and ethics (with three studies) lag well behind, a potentially troubling situation given the need to effectively manage a changing higher education environment within which issues of context, equity, and integrity are becoming increasingly pressing (Perraton, 2000).

In terms of research methods, the studies represented would seem to be almost equally divided among developmental (7), field (6), and survey (6). However, it is important to note that all seven of the developmental studies were presented at the Wisconsin conference, reflecting its front-line practitioner focus. Evaluation research was also well-represented with five studies, indicating its ongoing importance in monitoring the impact of particular programs within an institution. Experimental and quasi-experimental approaches were represented in only three of the thirty-one studies, perhaps reflecting the difficulty of conducting such studies in the complex, never-static environment of teaching and learning.

Overall, seven of the thirty-two research articles focused on the role of interaction, dialogue, or community in eLearning. Four studies were from the faculty/pedagogy perspective, and three fit in the student experience/student outcomes category. In terms of research approach, three were experimental or quasi-experimental, two were evaluative, and one each were field and developmental research.

## **Challenges in eLearning Research**

### **Philosophical, Axiological, and Teleological Challenges**

Research begins within and reflects particular philosophical stances or worldviews and the values associated with them. It is widely suggested that even the supposedly value-free approach epitomized by experimental research methods operates within a particular assumptive framework: not only that “it is possible to describe the physical and social world scientifically so that, for example, multiple observers can agree on what they see” (National Research Council, p. 25), but also that describing the world in ways that forestall multiple perspectives and interpretations leads to “truer” knowledge and, therefore, is more valuable than other approaches.

Differences in philosophy and values also are reflected in the presumptive ends of educational research and of eLearning itself. Is eLearning and the research conducted to study it intended to meet individual, social, and/or global needs? Should it be focused on identifying factors correlating with individual success? With answering questions relating to the development of human resources and capital? With studying education as a means of addressing the structural inequalities that characterize much of traditional higher education? How should scarce programming and research dollars be invested? Answers

to these and other questions are embedded in individual researcher's, educational institutions, and funding agencies philosophical frameworks and values. In today's diverse global context an assumption of common theoretical frameworks and research agendas is increasingly difficult to maintain, the efforts of the federal government to do so with its emphasis on "scientifically based research" notwithstanding. As Feuer, Town, and Shavelson (2002, p. 7) point out, "The challenge of the field of education is to bring diverse communities, both scientific and otherwise, together to integrate theories and empirical finding across domains, cultures, and methods."

### **Epistemological Challenges**

The question of what counts as knowledge has been the subject of heated debate for millennia. Disagreements over the meaning, relative value, and ways of obtaining data, information, knowledge, and wisdom continue to divide researchers along philosophical and disciplinary lines. As St. Pierre (2002, p.25) comments, "Unfortunately, it is often the case that those who work within one theoretical framework find others unintelligible."

Such lack of understanding is of course lamentable given the complexity of educational problems to be informed by research and the potential for untangling them through coordinated approaches from multiple perspectives. However, this distrust of "the other's" approach to research takes on more powerfully negative connotations when it characterizes the largest single funder of educational research: the federal government.

Commenting on new legislation requiring research proposals to conform to "scientific principles for education research," Feuer, Towne, and Shavelson (2002, p. 4) suggest that "Unprecedented federal legislation exalts scientific evidence as the key driver of education policy and practice...." Thus the question "What counts as knowledge?" become the question "Who decides?" If the entity holding the funding purse strings proclaims that "adherence to scientifically-based research will be a critical factor in ...funding decisions"(Beghetto, 2003), then that "five-hundred pound gorilla," that is, the federal government, becomes a major adjudicator of what counts as knowledge. Minimizing the potentially negative impact of such a uni-dimensional approach to knowledge while maximizing the motivation and ability of educational researchers to monitor the quality of research as a community is a major challenge for the field of educational research in general and eLearning research in particular.

### **Methodological Challenges**

Appropriately matching methods to questions and context is an ongoing challenge in educational research: "The question drives the methods, not the other way around" (Feuer, Towne, and Shavelson (2002, p.8). And while the question—as opposed, for example, to federal policy makers—*should* drive the method, the questions themselves are situated in particular times and places, necessitating the factoring of contextual variables into methodological decisions, as well:

[Educational] research forces us to deal with particular problems, where local knowledge is needed. Therefore, ethnographic research is crucial, as are case studies, survey research, time series, design experiments action research, and other means....” (Berliner, 2002, p. 19)

In other words, no single research method can provide us with answers to questions about “the hardest science of all,” educational research (Berliner, 2000, p. 19). Unfortunately, at the same time that educational researchers themselves are expanding their repertoire of methodological tools for studying an increasingly complex educational environment, many funders of research—most notably the federal government, but others as well—are narrowing their focus to “scientific research,” which can answer some questions very well but many questions poorly, if at all. Although presumably done with the best of intentions in the name of “accountability,” this trend has the potential to greatly hamper eLearning research efforts.

### **Opportunities in eLearning Research**

Three opportunities for eLearning research are in under-researched topic areas, interdisciplinary research, and international research collaborations.

#### Under-Researched Areas

Review of the contexts discussed here, as well as a broader examination of the eLearning literature, reveals a number of gaps in each of the categories identified in the proposed research agenda discussed earlier. In the area of institutional policy and management, few studies have focused on the changes in policy necessary to integrate eLearning into traditional higher education contexts or on appropriate measures of quality for this new innovation. In relation to the faculty experience in teaching online, many questions of barriers to participation and institutional responses to faculty needs and concerns remain largely unexamined beyond the contexts of individual institutions. Although questions relating to the student experience in the online environment have been the focus of numerous studies, still needed is a broader examination that takes us beyond *what* happens in the eLearning environment to *how* and *why* particular results are observed. In both the faculty and student experience categories, questions of the nature, value, and impact of interaction, dialogue, and community need to be examined, particularly in relation to expectations and workload. Finally, questions of context and ethics have received only minimal attention from researchers. As Perraton (2000, ¶1) notes, “Research on the context of open and distance learning ...has been relatively neglected as contrasted with research on its application.” The relevance of eLearning to a variety of contextually situated educational problems needs to be studied by researchers in education and other fields.

### Inter-Disciplinary Research

Inter-disciplinary research represents both challenge and opportunity. As Chapelle (2004) has pointed out in her research on second language learning and online communication, multiple research approaches from a variety of disciplines are necessary to answer complex educational questions. Yet coordination and cooperation among researchers from various disciplines will require first that researchers gain an understanding of and respect for norms and approaches to research other than their own. To the extent that such a cross-disciplinary community of researchers can be built and maintained, however, we will come closer to untangling some of the complexities of educational research that can only be addressed through multiple perspectives and approaches.

### International Collaboration

International collaborations in eLearning research offer some of the same challenges and opportunities as does inter-disciplinary research. Difficulties are inherent in the negotiation of approaches based in different cultural and intellectual perspectives, as well as negotiation among norms and standards of practice. However, as the context within which eLearning is practiced becomes more global, the payoffs for overcoming such difficulties become higher. The synergy possible from coordinating approaches to major educational problems and questions and the resource maximization possible from reducing duplication of effort argues for both support of and participation in international collaborative efforts, such as those coordinated by WUN.

## **Conclusion**

The eLearning practice and research environment in the US is complex and dynamic, making it impossible to provide a comprehensive overview of the situation. The observations presented here are intended to offer some general insights and to suggest directions for future research efforts, as well as challenges and opportunities that will need to be addressed to maximize the results of those efforts. Continued dialogue on these topics among eLearning researchers and those in related fields will be necessary to move the field forward in ways that serve the needs of individuals, institutions, and societies.

## References

*About the conference.* (2005). Retrieved April 9, 2005, from <http://www.uwex.edu/disted/conference/overview.htm>

Bates, A. (1999). Cultural and ethical issues in international distance education. Paper presented at the Engaging Partnerships: Collaboration and Partnership in Distance Education UBC/CREAD conference, Vancouver, Canada, September 21-23, 1999. Available from <http://bates.cstudies.ubc.ca/pdf/CREAD.pdf> (accessed June 2003).

Beghetto, R. (2003). Scientifically based research. *Research Roundup* 19(3), Clearinghouse on Educational Policy and Management, University of Oregon. <http://eric.uoregon.edu/publications/roundup/spring2003.html>

Belanich, J., Wisher, R., & Orvis, K.L. (2004). A question-collaboration approach to web-based learning. *The American Journal of Distance Education*, 18(3), 169-185.

Berliner, D. (2002). Educational research: The hardest science of all. *Educational Researcher*, 31(8):18-20. Available: <http://www.aera.net/publications/?id=438>. Accessed March 10, 2005.

Billings, D. & Connors, H. (nd). Best practices in online learning. In *NLN: The Living Book* [online]. Available: [http://electronicvision.com/nln/chapter02/chapter\\_02.htm](http://electronicvision.com/nln/chapter02/chapter_02.htm). Accessed January 13, 2004.

Boris, G., & Hall, G. (2004, July). *Critical thinking and online learning: a practical inquiry perspective in higher education*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Buchanan, E. (2004, July). *Perspectives on online mentoring from a graduate school of library and information science web-based program*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Chapelle, C. (2004). Learning through online communication: Findings and implications from second language research. Pre-seminar draft, WUN eLearning Seminar Series: Researching Dialogue and Communities of Inquiry in Higher Education. Available: [http://www.wun.ac.uk/elearning/seminars/seminar\\_one/seminarone.html](http://www.wun.ac.uk/elearning/seminars/seminar_one/seminarone.html). Accessed April 1, 2005.

Chatterji, M. (2002). Evidence on "What Works": An argument for extended-term mixed-method (ETMM) evaluation designs. *Educational Researcher*, 31(8):3-13. Available: [www.aera.net/publications/?id=438](http://www.aera.net/publications/?id=438), accessed March 30, 2005.

Distance Learning Policy Laboratory Quality Assurance Subcommittee. (2002). *The challenges of quality assurance in a distance learning environment*. Atlanta, GA: Southern Regional Education Board.

Eaton, J. (2000). *Core academic values, quality, and regional accreditation: The challenge of distance learning*. CHEA Monograph Series. Washington, DC: Council for Higher Education Accreditation.

Erickson, F. and Gutierrez, C. (2002). Culture, rigor, and science in educational research. *Educational Researcher*, 31(8):21-24. Available: <http://www.waera.net/publications/?id=438>. Accessed March 10, 2005.

Feuer, M., Towne, L., and Shavelson, R. (2002). Scientific culture and educational research. *Educational Researcher*, 31(8):4-14. Available: <http://www.waera.net/publications/?id=438>. Accessed March 10, 2005.

Giguere, P., Formica, S., & Harding, W. (2004). Large-scale interaction strategies for web-based professional development. *The American Journal of Distance Education*, 18(4), 207-224.

King, J.W., G.C. Nugent, J.J. Eich, D.L. Mlinek, and E.G. Russell. 2000. A policy framework for distance education: A case study and model. Available online at <http://www.ed.psu.edu/acsde/deos/deosnews.html>.

Klassen, J. and Vogel, D. (2001). Ethical issues arising from e-education. Paper presented at the International Conference on Computers in Education, November 12-15, 2001, Seoul, Korea. Available from <http://www.icce2001.org/cd/pdf/p14/HK102.pdf> (accessed June 2003).

Lee, Y., Driscoll, M., and Nelson, D. (2004). The past, present, and future of research in distance education: Results of a content analysis. *The American Journal of Distance Education*, 18(4): 225-242.

McClenney, K. (2003). Benchmarking best practices in the learning college. *Learning Abstracts, World Wide Web Edition*, 6(4) [online]. Available <http://www.league.org/publication/abstracts/learning/lelabs0304.html>

Molinari, D. (2004). The role of social comments in problem-solving groups in an online class. *The American Journal of Distance Education*, 18(2), 89-102.

National Center for Education Statistics. (2003). Distance education at degree-granting postsecondary institutions: 2000-2001. Washington, DC: US Department of Education. Available from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003017> (accessed August 2003).

National Research Council (2002). Scientific research in education. R. Shavelson and L. Towne (eds.). Committee on Scientific Principles for Education Research. Washington, DC: National Academy Press.

Noblitt, J. (1997). Making ends meet: A faculty perspective on computing and scholarship. *Educom Review*, 32(3).

Pellegrino, J., and Goldman, S. (2002). Be careful what you wish for—You may get it: Educational research in the spotlight. *Educational Researcher*, 31(8):15-17. Available: <http://wwaera.net/publications/?id=438>. Accessed March 10, 2005.

Perraton, H. (2000). Rethinking the research agenda. International review of research in open and distance learning, June. Available: <http://www.irrodl.org/content/v1.1/hilary.html>. Accessed June 15, 2004.

Rahimzadeh, K., & Kolloff, M. A. (2004, July). *Modeling role-play in an online environment: A web-based pedagogy*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Roberts, P. (2000). Ethical dilemmas in researching online communities: “Bottom-up” ethical wisdom for computer-mediated social research. Paper presented at the International Distance Education and Open Learning Conference, Adelaide, Australia, September 11-13, 2000. Available: <http://www.com.unisa.edu.au/cccc/papers/refereed/paper40/Paper40-1.htm> (accessed July 2003).

Rose, M. (2004). Comparing productive online dialogue in two group styles: Cooperative and collaborative. *The American Journal of Distance Education*, 18(2), 73-88.

Spangehl, S. (2002). Aligning Assessment, Academic Quality and Accreditation. *Assessment and Accountability Forum*, (Summer).

St. Pierre, E. (2002). “Science” rejects postmodernism. *Educational Researcher*, 31(8), 25-27. Available: <http://wwaera.net/publications/?id=438>. Accessed March 10, 2005.

Tait, A. (1999). The convergence of distance and conventional education. Some implications for policy. In *The Convergence of Distance & Traditional Education*, eds. A. Tait and R. Mills, 141-160. New York: Routledge.

Thompson, M. M. (2002). Faculty satisfaction in the online environment. In *Online Education*, Volume 4, ed. J. Moore, 189-212. Needham, MA: SCOPE (Sloan Center for On-Line Education).

Thompson, M. M., and M. Irele. (2003). Evaluating distance education programs. In *Handbook of American distance education*, ed. M. Moore, 567-584. Mahwah, NJ: Lawrence Erlbaum.

Tucker, R. The Rhetoric of Quality. *Adult Assessment Forum*, Summer 1997.

## Appendix

### 2004 Conference Papers and Journal Articles from the Three Research Communities

#### Annual Distance Teaching & Learning Conference

Baab, L. (2004, July). *Investigating the value of live video and audio in online learning*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Boris, G., & Hall, G. (2004, July). *Critical thinking and online learning: a practical inquiry perspective in higher education*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Buchanan, E. (2004, July). *Perspectives on online mentoring from a graduate school of library and information science web-based program*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Chyung, S. (2004, July). *Hoping to reduce attrition? Follow the SIEME model and investigate motivation-hygiene factors*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Conceicao, S., & Lehman, R. (2004, July). *Using learning objects as instructional aids to help adult learners become self-directed*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Delany, J. (2004, July). *Enhancing e-Learning capability: Flexible e-learning for the digitally disadvantaged*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Jiang, M., Parent, S., & Eastmond, D. (2004, July). *Effectiveness of web-based learning opportunities in a competency-based program*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Kannan, J., & Miller, J. I. (2004, July). *Affect and learner autonomy in an online environment*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Kinsel, E., Cleveland-Innes, M., & Garrison, R. (2004, July). *Student role adjustment in online environments: From the mouths of online babes*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Long Soldier, H. Leaf, B., & Benally, L. (2004, July). *The role of technology in the math/science education of native America females: A study of a little priest tribal college*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Muse, H. E. (2004, July). *At-risk factors for the community college web-based student*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Phelps, K., & Berghoefer, J. (2004, July). *Evaluating student characteristics and demand for distance education to determine marketing strategies*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Rahimzadeh, K., & Kolloff, M. A. (2004, July). *Modeling role-play in an online environment: A web-based pedagogy*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Schlais, H., & Ploetz, P. (2004, July). *Learning Object reusability: What does it really mean to faculty and faculty support personnel?* 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Sitzmann, T.M., Wisher, R., Stewart, D & Kraiger, K. (2004, July). *Moderators of the effectiveness of web-based instruction*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

Zhang, D. (2004, July). *Use of online chat by heritage learners in a blended Chinese class*. 20<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI.

### **Sloan-C Summer Research Workshop 2004**

Dziuban, C., Moskal, P., & Hartman, J. (2004). *Higher education, blended learning and the generations: Knowledge is power – no more*. Sloan-C Summer Research Workshop, pre-publication draft.

Lockee, B. (2004). *Instructional technology graduate programs in support of industrial e-learning*. Sloan-C Summer Research Workshop, pre-publication draft.

Robinson, R. (2004). *The business of online education - are we cost competitive?* Sloan-C Summer Research Workshop, pre-publication draft.

Schiffman, S. (2004). *Business issues in online education*. Sloan-C Summer Research Workshop, pre-publication draft.

Theroux, J., & Kilbane, C. (2004). *The real-time case method: The Internet creates the potential for new pedagogy*. Sloan-C Summer Research Workshop, pre-publication draft.

***The American Journal of Distance, Volume 18 Numbers 1-4.***

Belanich, J., Wisher, R., & Orvis, K.L. (2004). A question-collaboration approach to web-based learning. *The American Journal of Distance Education*, 18(3), 169-185.

Bender, D., Wood, B. & Vredevoogd, J. (2004). Teaching time: Distance education versus classroom instruction. *The American Journal of Distance Education*, 18(2), 103-114.

DeTure, M. (2004). Cognitive style and self-efficacy: Predicting student success in online distance education. *The American Journal of Distance Education*, 18(1), 21-38.

Dupin-Bryant, P. (2004). Pre-entry variables related to retention in online distance education. *The American Journal of Distance Education*, 18(4), 199-206.

Giguere, P., Formica, S., & Harding, W. (2004). Large-scale interaction strategies for web-based professional development. *The American Journal of Distance Education*, 18(4), 207-224.

Hanlon, L. (2004). Accreditation of distance learning in the field of dentistry. *The American Journal of Distance Education*, 18(3), 151-167.

Lee, Y., Driscoll, M., and Nelson, D. (2004). The past, present, and future of research in distance education: Results of a content analysis. *The American Journal of Distance Education*, 18(4): 225-242.

Molinari, D. (2004). The role of social comments in problem-solving groups in an online class. *The American Journal of Distance Education*, 18(2), 89-102.

Rose, M. (2004). Comparing productive online dialogue in two group styles: Cooperative and collaborative. *The American Journal of Distance Education*, 18(2), 73-88.

Stewart, I., Hong, E., & Strudler, N. (2004). Development and validation of an instrument for student evaluation of the quality of web-based instruction. *The American Journal of Distance Education*, 18(3), 131-150.