# *DISTANCE EDUCATION, WEB-BASED INSTRUCTION, AND TODAY'S EDUCATOR*

**Jennifer M. Brill**
*University of Georgia*

Distance education and, in particular, Web-based instruction continue to move to the forefront as *the* innovations expected to dramatically change current approaches to teaching and learning. This paper explores what a move to Web-based education means for today's educators as they reinvent their professional practice in a distance learning environment. Traditional views of teachers and teaching are presented and contrasted with new paradigms for teaching and learning. Critical knowledge, skills, and other supports needed to shift from conventional to cutting-edge ways of thinking and doing are offered. Implications of new instructor roles, as spurred on by distance education, are presented.

Distance education and, in particular, Web-based instruction continue to move to the forefront as *the* innovations expected to dramatically change current approaches to teaching and learning (Bonk, Cummings, Hara, Fischler, & Lee, 2000; Owston, 1997; Wiens & Gunter, 1998; Zhao, 1998). Evidence of the growth of distance education continues to mount. In 1998, the National Center for Education Statistics reported that 33% of United States higher education institutions already offered distance education courses and an additional 25% planned on having distance offerings by 1998 (Lewis, Alexander, & Farris, 1998). The prominence of distance education reveals itself not only in practice but also in research. A number of scholarly publications are dedicated to the field including *Distance Education Report,* the *American Journal of Distance Education*, *Distance Education*, the *Journal of Distance Education*, and the newly established *Quarterly Review of Distance Education*. An ERIC search on journal articles concerned with Web-based instruction resulted in zero matches in 1995 and 41 articles in 1999, demonstrating expanding interest.

Web-based instruction and other communication technologies afford many different learning opportunities from the ability to interact with others located around the world to the freedom to learn in one's own space, at one's

• **Jennifer M. Brill**, Learning Sciences Consultant, Doctoral Candidate, University of Georgia, 604 Aderhold Hall, Athens, GA 30602. E-mail: jbrill@coe.uga.edu

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own time (Anglin & Morrison, 2000; Romiszowski & Mason, 1996). Chat, bulletin board, Internet, and email technologies open up a world of resources and expertise to teachers and students. A student studying Italian architecture is no longer limited by books and slides, only by his or her imagination. Learning might be enhanced by an online chat with an architect in Florence or a virtual tour of Rome on the Internet. With the added flexibility of laptop computers and around-the-clock Internet access, these activities can take place within or without the walls of the traditional classroom and more according to the learner's schedule. Further, an eclectic use of media such as audio, video, and text as well as assorted strategies including synchronous and asynchronous communication speak to a variety of learner preferences (Wiens & Gunter, 1998).

Distance learning technologies such as Web-based instruction also pose a number of significant challenges. Technological limitations, such as unreliable Internet service providers, the limited availability of necessary hardware and software, and incompatible file formats are commonly discussed in the literature (Cornell, 1999; Wiens & Gunter, 1998). A slow connection to the Internet alone can be a source of great frustration for a learner and quickly impact his/her motivation to maintain time on task (Carr, 2000). Inadequate technical training and support is another oft-cited obstacle (Besser, 1996; Cornell, 1999). If the chat system has crashed or additional software is needed to view Web-based media, a learner must have the skills to troubleshoot these issues or have timely access to reliable technical support. Otherwise, the motivation to learn in technology-rich environments may again be dampened.

One challenge that is not as well attended to is the demand that Web-based instruction will place on educators as they learn how to adapt to and utilize a new medium in a manner that is effective for themselves and their students (Beaudoin, 1990; Besser, 1996; Rowe, 1999). Speaking of instructors in higher education, Beaudoin (1990) situates this challenge within the larger context, noting a shift in the roles that instructors will have to assume:

> The emergence of increasingly student-centered learning activities in the 1970s, facilitated by new instructional technology introduced in the 1980s, is contributing to a dramatic evolution in faculty roles, and raises fundamental questions within the professoriat about how it will contribute to the teaching-learning process in the 1990s and beyond. In particular, the likelihood of significant increases in distance learning enrollments within the next decade will have a profound impact on faculty members' instructional roles. (p. 21)

How will today's educator face the challenge of integrating distance education formats such as Web-based instruction into the curriculum? What specific challenges do these new learning environments pose for the instructor? What knowledge, skills, and support will an instructor need to meet these challenges and be an effective practitioner in a Web-based environment?

Some authors (Carr, 2000; Lowther, Jones, & Plants, 2000) emphasize that educators require certain technological competencies. Certainly, educators must be skilled and comfortable with the technologies that they employ as part of any instructional episode. Whether the technology is an overhead projector, a VCR, or an electronic bulletin board, an instructor must know when to call on it and how to use it effectively to support learning. Beyond technological literacy, are there other knowledge, skill, and support areas to be addressed? To answer these questions, it is important to not only develop theory and evaluate the effectiveness of distance education but also to explore and describe practice (Anglin & Morrison, 2000).

The purpose of this paper is to explore what a move to Web-based distance education means for today's educators—the opportunities they will encounter, the challenges they will face, and the knowledge, skills, and support they will need as they reinvent their pro-

fessional practice in a Web-based learning environment. To set the stage, traditional views of teachers and teaching will be presented. Second, new paradigms for teaching and learning will be discussed. Next, the knowledge, skills, and other supports needed to shift from conventional to cutting-edge ways of thinking and doing will be offered. Finally, a number of implications of new instructor roles, as spurred on by distance education and other innovations, will be presented.

## *TRADITIONAL PARADIGMS, TRADITIONAL ROLES*

Since the seventeenth century, ways of knowing and investigating the world have been dominated by empirical, reductionist perspectives such as those advanced by the work of Descartes and Newton. From this mechanistic perspective, the world is approached as a machine that can be disassembled through rational and systematic analysis. This deductive, scientific method has been relied on to separate the world into discreet, manageable parts that could then be examined closely and therefore, it is thought, understood. Such an objectivist paradigm has shaped not only ways of inquiry but also approaches to teaching and learning in formal education (Beavis, 1995; Doll, 1989; Prigogine, 1984).

In the objectivist tradition, learning was posited as a highly predictable and externally manageable phenomenon and educational practices were developed and evaluated through a very positivist, objective point of view (Gagne, 1977; Reigeluth, 1996). By breaking down and understanding the conditions of learning, an educator could develop and invoke instruction that caused students to learn. Behaviorism promoted the use of positive reinforcers to strengthen certain student behaviors and punishments to eradicate other undesirable behaviors (Smith, 1966). This behaviorist perspective fostered the development of controlled, uniform learning environments with highly directive teachers and extremely passive learners (Reigeluth, 1996).

These highly standardized and centralized educational practices supported the goals of the industrial age in that they encouraged citizens who could live and work effectively in highly bureaucratic and compartmentalized systems (Reigeluth, 1996). The traditional approach to education promoted teaching and learning as occurring within a bounded system with the instructor holding the power, control, and expertise. For as long as most knowledge was bounded, primarily by the technology of the printed book, it was easy to maintain such a highly controlled and one-way system of learning.

## *NEW WAYS OF THINKING AND LEARNING*

> We begin with an assumption that a university professor remains the unquestionable source of content for classes he or she is teaching, yes? Not any more! As increased access to information becomes instantly available, it takes very few keystrokes to uncover all kinds of new information with which one's instructor may or may not be familiar. (Cornell, 1999, p. 93)

In contrast to the traditional educational paradigm, research, practice, and technological advances over the last several decades have created the opportunity for new views of teaching and learning (Zhao, 1998). Learning is understood as a much more dynamic and socially interactive process that flows out of a mixture of external and internal elements including environment, resources, individual learning styles, motivation, and so forth (Brown, Collins, & Duguid, 1989). Learning is seen as a process that is not so predictably managed as it is facilitated, encouraged, and supported. Interestingly, the idea of learning as a process is not a new one. In fact, the seminal works of Dewey (1974) express education as a life process rather than an end product.

Recently, this more subjective, interpretivist view has fueled attempts at new learning

environments that are more fluid and centered on the needs of the learner and the situation at hand. Technological advances such as the computer, the Internet, email, bulletin boards, and satellite television have fostered the distribution of knowledge, making it more directly accessible, anytime, anywhere, by the learner. In such environments, the educator is meant to focus less on teaching and more on "the intricate structuring of a community's learning resources" (Lave & Wenger, 1991; Zhao, 1998). These dramatically different educational settings are meant to support the characteristics of the information age, developing citizens of the world who are comfortable with cooperative relationships, shared decision-making, and autonomy with accountability (Reigeluth, 1996). With this ongoing shift from behaviorist, instructivist approaches to education to dynamic, collaboratively constructed, technologically supported learning environments comes the need for new approaches to educator development that provide for the skills of facilitation in complex, decentralized learning environments.

## *NEW KNOWLEDGE, SKILL, AND SUPPORT REQUIREMENTS*

> Rather than transmit information in person, many faculty will have to make the adjustment to monitoring and evaluating the work of geographically distant learners. Those faculty accustomed to more conventional teaching modes will have to acquire new skills to assume expanded roles not only to teach distance learners, but also to organize instructional resources suitable in content and format for independent study. (Beaudoin, 1990, p. 21)

The transformation of learning paradigms and environments and the subsequent transformation of "the teacher" require that new knowledge and skills be emphasized in the professional development of educators. If teachers continue to be developed as content experts and classroom managers who primarily disseminate knowledge, regulate learning, and test for achievement, they will be ill-prepared to think differently about teaching and learning. Moreover, they will be ineffective (and frustrated) in highly decentralized, collaborative settings that technology-supported environments such as Web-based instruction enable (Zhao, 1998).

Teachers must now be developed as resource and process facilitators who work side-by-side with learners in a flexible and collaborative partnership to achieve learner goals (Wiens & Gunter, 1998). But, how does one develop a resource and process facilitator? Two areas, instructional design and authentic learning practices, provide guidance toward the development of this new form of educator.

### *Instructional Design*

Theories of instructional design encourage educators to view learning as a multi-faceted and complex system with inputs, processes and outputs that are shaped and reshaped through an ongoing cycle of feedback and revision (Dick & Carey, 1996). Instructional design models and approaches expand our focus to include not just the teacher and the curriculum but also the learner, the environment, goals, resources, constraints, and outcomes (Gustafson & Branch, 1997). Practices such as needs assessment, goal and learner analysis, and formative evaluation (Dick & Carey, 1996) force one to consider the complexities of any learning episode by approaching it from a more holistic, systems, perspective in which learners are the focal point. Instructional design theory and strategies inform the educator as to what a learning experience should feel like given the people, places, and things that contribute to it (Reigeluth, 1996).

With learners and learning at the center, the teacher serves as "guide on the side" rather than "sage on the stage." With the instructor as coach and necessarily, only one agent for learning, other elements, including students, real-world practitioners, and electronic resources, rise in prominence as integral

aspects fueling the learning experience. Learning transforms into whatever events are necessary to support purposeful development and the teacher transforms into a facilitator and resource rather than sole expert and director (Reigeluth, 1996).

This conception of teacher as facilitator takes on even more importance in such technologically rich and decentralized settings as Web-based learning environments. In examining the experience of faculty moving from a traditional course setting to a Web-based environment, Wiens and Gunter (1998) found that:

> …the primary characteristic needed by the instructor was not knowledge of the technical aspects of Web-based instruction, but rather flexibility during the entire process. Flexibility was very important to solve the problems of emphasis on the curriculum, pedagogy and technology during the design and development stage. During the delivery stage, flexibility to ask honest and open questions about the good and the bad of Web-based instruction and be willing to make the necessary changes quickly to accomplish the objectives…was essential. (p. 98)

Interestingly, Anglin and Morrison (2000) criticize distance education research for not differentiating between delivery technologies (hardware and software) and instructional technologies (use of examples, provisions for practice, etc.). By not making the distinction clearly, teachers attempting to transition to a distance education setting may learn how to construct a Web site technically but not how to embed real and innovative opportunities for learning in the design. Technology-rich environments merely become an extension of traditional teacher-centered practices rather than opportunities for progressive, learner-centered approaches (Zhao, 1998). Processes of instructional systems design such as needs assessment, learner, content and environmental analyses, and ongoing formative evaluation encourage educators to go beyond technical proficiency, engaging with curriculum, pedagogy, and technology in the flexible manner that Wiens and Gunter (1998) advocate, as designers and supporters of learner-centered experiences.

## *Situated Cognition and Authentic Learning*

Emerging from anthropology, sociology, and cognitive science, situated cognition theory represents a major shift in learning theory away from traditional psychological views of learning as mechanistic and individualistic toward perspectives of learning as more emergent and social (Greeno, 1998; Lave & Wenger, 1991; Salomon, 1996). In fact, Lave and Wenger (1991) describe learning as "an integral part of generative social practice in the lived-in world" (p. 35). Dynamic communities of practice are seen as a critical element of this sociological view of learning (Lave & Wenger, 1991). As one key member of the community, the educator is positioned as the point person who orchestrates a rich and varied learning experience by choreographing critical members and resources into interactive communities embedded in the culture (Lave & Wenger, 1991; Schell & Rojewski, 1995).

Situated cognition theory provides a rich source of knowledge for educators to understand and begin to consider community-based learning practices. Knowledge of situated cognition theory provides a pedagogical context for educators to understand and appreciate some of the hallmark characteristics of Web-based learning environments. Through the power of distance technologies, Web-based instruction enables dynamic communities of learners to form and expand across the globe (Gordin, Gomez, Pea, & Fishman, 1995). Such communities beyond the classroom have been demonstrated in the research as pedagogically valuable (Garner & Gillingham, 1996; Newman & Moss, 2000).

By valuing a situated cognition perspective, such a decentralized and mutable environment for learning becomes less of a threat to the instructor who is accustomed to the clear and controlled boundaries of the traditional four-walled classroom. Without knowledge of situ-

ated learning theory and practices, educators may view Web-based learning environments as unmanageable and perfidious to their role as authoritarian, and even disciplinarian, during a learning episode. Judging Web-based learning environments through the lens of traditional teaching and learning practices, the potential for educators to reject or misuse instructional technologies is significant (Zhao, 1998).

Beyond offering a community-based perspective on learning, situated cognition theory encourages educators to immerse learning in an environment that is as close as possible to the "real world" in which new ideas and behaviors will be applied (Schell & Black, 1997). The traditional classroom and traditional educational practices hardly mirror the real world. In response, authentic learning is emerging as a new area of research directed at identifying educational practices that support the development of situated, high-fidelity learning cultures. Like other relatively new research areas, authentic learning is not clearly defined in the literature. However, a review of the recent literature in the area of authentic learning practices is useful in identifying six emerging themes. Educators must play a primary leadership role in introducing, synthesizing, and fostering the development of these themes in the classroom and, therefore, must be knowledgeable and skilled in them.

First, authentic learning requires that learners engage with problems that are ill-defined enough to elicit tension and intrigue yet informed enough to keep confusion and conflict at a productive level (Lafer & Markert, 1994; Schell & Black, 1997; Swan, 1994). A second theme of authentic learning is that situations must be presented that have meaning and connectedness to the natural world outside of the classroom (Swan, 1994). In fact, a number of researchers (Lafer & Markert, 1994; Moening & Bhavnagri, 1996; Prestine & McGreal, 1997) advocate that learning be evaluated more authentically by examining the application of learning to real-world outcomes produced over time. For example, through a mastery learning approach, learners might be guided to develop and refine professional portfolios in support of and as evidence of their learning (Moening & Bhavnagri, 1996; Starr & Krajcik, 1990). Third, educators must include activities that call on the involvement of a community of learners at varying levels of expertise—novice, master, process facilitator, and so forth (Jones & Harris 1995).

A fourth theme of authentic learning is that learning activities must rely on cross-disciplinary approaches, applying and integrating the methodologies of a number of diverse content areas (Schauble, Klopfer, & Raghavan, 1991; Swan, 1994). Fifth, educational activities must challenge learners to think and act independently, flexibly managing their learning by calling on any number of strategies and resources in support of producing meaningful learning artifacts (Petrosino, 1997; Relan & Smith, 1996; Starr & Krajcik, 1990). Finally, educators must encourage heavily, yet flexibly, scaffolded learning environments insisting that guided discourse and reflection be an ongoing and integrated aspect of the learning episode (Jones & Harris, 1995; Lafer & Markert, 1994; Nakhleh & Krajcik, 1993; Petrosino, 1997; Schell & Black, 1997; Swan, 1994). Although the instructor is not at the center of any of these six themes, he/she is the conduit for making them a reality in the classroom. In fact, from these six themes of authentic learning practice, educators can develop professional behaviors that support learning as a socially constructed and deeply contextualized phenomenon.

Although Web-based learning environments are often presented as a natural choice for more interactive and decentralized learning (Barron & Tompkins, 1997), today's educator is not necessarily the natural choice for facilitating such an approach, especially if trained in the classic ways of teaching and learning. Authentic learning provides practical strategies for educators struggling to adopt new ways of thinking about and supporting learning through distance education. It is one thing to encourage an educator moving from a traditional classroom setting to a Web-based learn-

ing environment to shift from being the expert-in-charge to a choreographer-of-learning. It is yet another and more valuable thing to offer concrete examples of what this looks like. Researched examples of authentic learning practices (Jones & Harris, 1995; Lafer & Markert, 1994; Petrosino, 1997; Schell & Black, 1997; Swan, 1994) do just that. Because of its diffuse and social nature, a Web-based learning environment is a natural tool for fostering learning in a manner that is non-directive yet still fosters learner engagement and self-management. Ill-defined problems tied to the real-world, communities that invite the voices of the novice and master, and activities that are richly embedded with opportunities for reflective practice have all been demonstrated as strategies for doing so (Corrent-Agostinho, Hedberg, & Lefoe, 1998; Gordin et al., 1995; Thomas, 1998).

### *New Supports*

In addition to new knowledge and skills that foster the development of educators as facilitators of learner-centered, resource-rich, and pedagogically sound learning environments, educators also need certain support mechanisms if they are expected to embrace Web-based instruction as an approach that works for *them* as well as learners. First, an educator needs access to reliable technical expertise. Some educators will bring quite a bit of technical expertise to the table. Others will choose to learn more about technologies such as Web authoring because they have the interest. However, as Wiens and Gunter (1998) point out:

> If the instructor is not or does not want to become a technology expert, it does not mean the instructor cannot teach a Web-based course. Without a doubt, someone has to be well versed in the technical art of Web design, but it does not necessarily have to be the instructor. (p. 95)

These same authors cite the University of Central Florida as an exemplar of adequate technical support. This university dedicates a university-level department, the Course Development Department, to providing the technical and administrative expertise necessary to develop and implement effective Web-based instruction. Faculty members are then free to focus primarily on curriculur and pedagogical aspects. Instructors do receive technical training but the focus is in developing skill in using the learner technologies to understand their most appropriate application in a course (Wiens & Gunter, 1998). Such a collaborative effort among faculty and technical support staff is critical for educators to develop the confidence in and maintain the commitment to Web-based learning environments.

A second support that is required in order for educators to adopt practices that take appropriate advantage of distance education opportunities is time (Rowe, 1999; Wiens & Gunter, 1998). Transitioning to a Web-based learning environment requires a tremendous investment in time from conception through design and development and implementation. Instructors can easily invest several semesters in just the design phase of such a course (Wiens & Gunter, 1998). Once the course is up and running, adequate time becomes even more important. To illustrate this point, Wiens and Gunter (1998) speak of an instructor of a newly developed Web-based course who was

> quickly overwhelmed with over 100 e-mail messages per day. Unlike traditional teaching methods the instructor has a constant mode of communication open to students….the door is always open and the instructor is always in, which can be overwhelming. (p. 97)

Not providing for the time required to be an effective Web-based instruction educator is just foolishly setting up the instructor, the students, and the school for failure.

Reliable technical expertise and adequate time are just two supports required in order for educators to be successful in a Web-based learning environment. There are many others including additional personnel to facilitate and manage large class sizes, guidelines that

address the ownership of course materials and issues of job security, and adequate compensation and reward and recognition structures (Beaudoin, 1990; Schneider, 1999). Although it is beyond the scope of this paper to describe these additional support areas in detail, it is important to identify them as valid issues for educators and educational institutions introducing Web-based learning environments.

## *CONCLUSION*

The purpose of this paper was to explore what a move to Web-based distance education means for today's educators—the opportunities they will encounter, the challenges they will face, and the knowledge, skills, and support they will need as they reinvent their professional practice in a Web-based learning environment. It was noted that Web-based learning environments present many opportunities including flexible learning times and spaces and direct and quick access to more expansive and diverse resources. Web-based learning environments also pose significant challenges often in the form of technological limitations and inadequate technical and administrative support.

Moreover, it was argued that the transition to distance education technologies demands that educators acquire new knowledge and skills in order to shift from a traditional "teacher as content expert" role to a more progressive "teacher as process facilitator" role. As Beaudoin (1990) puts it:

> …faculty engaged in distance education must be adept at facilitating students' learning through particular attention to process, unlike classroom-based teachers whose traditional role is largely confined to selecting and sharing content…. Faculty need assistance in order to understand and adapt to new roles; if they resist, the technology probably will not be used effectively and learning goals will be compromised. (p. 21-22)

Instructional design, situated cognition theory, and authentic learning practices were suggested as rich resources for acquiring pedagogical knowledge and skills to support educators as they shift into newly conceived roles. While acquiring new knowledge and skills, educators adopting Web-based instruction also need their institutions to provide critical supports including reliable technical expertise, adequate development and implementation time, reasonable class sizes, and judicious compensation and rewards.

The implications of educators acquiring new pedagogical knowledge and skills and institutions providing comprehensive and adaptive support structures are numerous. First, by providing educators with the opportunity to acquire progressive pedagogical knowledge and skills, teaching and learning practices will not only be strengthened in distance education environments but also in traditional classroom settings. As educators become more familiar and adept at needs assessment, formative evaluation, problem-setting, collaborative work, and reflective activities in a Web-based learning environment, it is more likely that they will transfer these and other innovative practices to the four-walled classroom. Second, the infiltration of new practices across learning environments may encourage teacher trainers to revamp traditional approaches to teacher education, which still largely focus on content and classroom management, integrating new knowledge and skill sets. Third, as educational institutions address support needs, new organizational structures will undoubtedly take form, creating a need for new staff members including technical consultants, instructional designers, lawyers versed in electronic media and copyright law, and human resource personnel able to design alternative compensation and reward structures.

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