CHAPTER 5

The Global E-Learning Framework

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With the rapid growth of the Internet and digital technologies, the Web has become a powerful, global, interactive, dynamic, economic and democratic medium of learning and teaching at a distance (Khan, 1997a). The Internet provides an opportunity to develop learning-on-demand and learner-centered instruction and training. There are numerous names for online learning activities, including E-Learning, Web-Based Learning (WBL), Web-Based Instruction (WBI), Web-Based Training (WBT), Internet-Based Training (IBT), Distributed Learning (DL), Advanced Distributed Learning (ADL), Distance Learning, Online Learning (OL), Mobile Learning (or m-Learning) or Nomadic Learning, Remote Learning, Off-site Learning, aLearning (anytime, anyplace, anywhere learning), etc. I use the term e-Learning to represent open, flexible and distributed learning.

Designing and delivering instruction and training on the Internet requires thoughtful analysis and investigation, combined with an understanding of both the Internet's capabilities and resources and the ways in which instructional design principles can be applied to tap the Internet potential

(Ritchie & Hoffman, 1997, cited in Khan, 1997b). Designing elearning for open, flexible and distributed learning environments is new to many of us. After reflecting on the factors that must be weighed in creating effective open, distributed and flexible learning environments for learners worldwide, the following definition of elearning is formulated:

E-Learning can be viewed as an innovative approach for delivering well-designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime, by utilising the attributes and resources of various digital technologies along with other forms of learning materials suited for open and distributed learning environment.

The above definition of elearning raises the question of how various attributes of elearning methods and technologies can be utilised to create learning features appropriate for diverse learners in an open, flexible and distributed environment.

Open and distributed learning environment

What is an open and distributed learning environment? According to Calder &

McCollum (1998), "The common definition of open learning is learning in your own time, pace and place" (p. 13). Ellington (1997) notes that open and flexible learning allows learners to have some say in how, where, and when learning takes place. Saltzberg and Polyson (1995) noted that distributed learning is not synonymous with distance learning, but, they stress its close relationship with the idea of distributed resources:

Distributed learning is an instructional model that allows instructor, students, and content to be located in different, non-centralised locations so that instruction and learning occur independent of time and place. . . . The distributed learning model can be used in combination with traditional classroom-based courses, with traditional distance learning courses, or it can be used to create wholly virtual classrooms. (p. 10)

Janis Taylor of Clarke College in Iowa who teaches students coming from different places in the Midwest commented on open, distributed and flexible learning:

Consider a student user who described her online education as open because she can sit out on her back deck supervising her children in the swimming pool while doing her homework. Now that's open-air and *open* learning. One of my preservice teachers works in a chemical lab in Cleveland, another is a court reporter three hours drive from me and another is a nurse in rural western Iowa. I, their teacher, am sitting in a small liberal arts college in eastern Iowa, a state badly needing to tap new people to come into the teaching profession. How could I get them all here to my campus if e-learning were not *distributed*? This open and distributed learning environment made learning flexible for a young traveling business woman who says "I take my college course, my instructor, and all of my fellow students with me on every business trip. With my laptop in my hotel room, I can view my teacher's demonstration, discuss it with my classmates in the Chat Room, and turn in my assignment by email." Now that's a *flexible* college program (J. Taylor, personal communication, June 22, 2004).

Flexibility in learning is, therefore, dependent on the openness of the system and the availability of learning resources distributed in various locations. A clear understanding of the open and distributed nature of learning environments will help us create meaningful learning environments with increased flexibility. Figure 5.1 graphically shows how an open and distributed educational system contributes to flexibility.
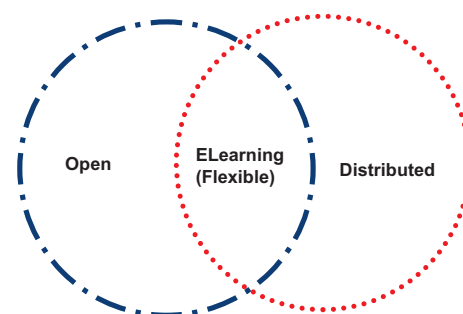

Figure 5.1. Open and Distributed learning

Traditional instruction and e-Learning

The design and format of open, flexible and distributed elearning can be different from traditional classroom instruction. Traditional classrooms are space bound. Traditional instruction treats learning pretty much as a *closed system*, taking place within the confines of a given classroom, school, textbook, field trip, etc. (Greg Kearsley, personal communication, January 27, 2000). Classroom-taught courses are not necessarily closed systems; many teachers assign students to do library based research papers, interview members of a professional community, engage in service-learning activities, and extend their learning

initiatives far beyond the classroom itself. Unfortunately many classes are bound by their four walls involving only the thoughts of the instructor, the textbook writer and occasional student comments. Classroom courses are also closed in the sense that they are limited to only those students who can physically come to the location (Taylor, personal communication, May 24, 2004)

On the other hand, elearning extends the boundaries of learning, so that learning can occur in the classrooms, from home and in the work place (Relan & Gillani, 1997). It is a flexible form of education because it creates options for learners in terms of where and when they can learn (Krauth, 1998). A welldesigned elearning course allows learners to become actively involved in their learning processes. However, a poorly designed elearning course can be just as rigid and dogmatic and non-interactive as a poorly taught face to face course. The scope of openness and flexibility in elearning is dependent on how it is designed. "While having an open system has its appeal, it can make designing for it extremely difficult, because in an open system, the designer agrees to give up a certain amount of control to the user" (Jones & Farquhar, 1997, p. 240). The more open the learning environment, the more complex the planning, management, and evaluation of it (Land & Hannafin, 1996). For example, the instructor cannot monitor who helps the student on tests unless proctored.

Learner-focused e-learning system

A leading theorist of educational systems, B.H. Banathy (1991), makes a strong case for learning-focused educational and training systems where "the learner is the key entity and occupies the nucleus of the systems complex of education" (p. 96). For Banathy, "*when learning is in focus*, arrangements are made in the environment of the learner that communicate the learning task, and learning resources are made available to learners so that they can explore and master learning tasks" (p. 101). A distributed learning environment that can effectively support learning-on-demand must be designed by placing the learners at the centre. In support of learnercentered approach, Moore (1998) states:

> Our aim as faculty should be to focus our attention on making courses and other learning experiences that will best empower our students to learn, to learn fully, effectively, efficiently, and with rewarding satisfaction. It is the responsibility of our profession to study ways of maximising the potential of our environments to support their learning and to minimise those elements in their environments that may impede it. (p. 4).

Success in an e-learning system involves a systematic process of planning, designing, evaluating, and implementing online learning environments where learning is actively fostered and supported. An e-learning system should not only be meaningful to learners, but it should also be meaningful to all stakeholder groups including instructors, support services staff, and the institution. For example, an e-learning system is more likely to be meaningful to *learners* when it is easily accessible, clearly organised, well written, authoritatively presented, learnercentered, affordable, efficient, flexible, and has a facilitated

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learning environment. When learners display a high level of participation and success in meeting a course's goals and objectives, this can make e-learning meaningful to *instructors*. In turn, when learners enjoy all available support services provided in the course without any interruptions, it makes *support services staff* happy as they strive to provide easy-to-use, reliable services. Finally, an e-learning system is meaningful to *institutions* when it has a sound return-on-investment (ROI), a moderate to high level of learners' satisfaction with both the quality of instruction and all support services, and a low drop-out rate (Morrison & Khan, 2003).

A Framework for e-learning

The seeds for the ELearning Framework began germinating with the question, "What does it take to provide flexible learning environments for learners worldwide?" With this question in mind, since 1997 I have been communicating with learners, instructors, trainers, administrators, and technical and other support services staff involved in e-learning in both academic (K12 and higher education) and corporate settings from all over the world. I researched critical e-learning issues discussed in professional discussion forums, and designed and taught online courses. I reviewed literature on e-learning. As the editor of *Web-Based Instruction* (1997), *Web-Based Training* (2001), and *Flexible Learning* (2007), I had the opportunity to work closely on elearning issues with about two hundred authors from all over the world who contributed chapters in these books.

Through these activities, I have come to understand that e-learning represents a paradigm shift not only for learners, but also for instructors, trainers, administrators, technical and other support services staff, and the institution. We (i.e., students, instructors, and staff) are accustomed to

the structure of a traditional educational system where instructor-led, face-to-face classes are the learning environment. E-learning, on the other hand, is an innovative way of providing instruction to diverse learners in an environment where students, instructors, and support staff do not see each other. The format of such a learning environment is different from traditional classroom instruction. As indicated earlier, traditional classroom-based instruction takes place in a closed system (i.e., within the confines of a given classroom, school, textbook, or field trip) whereas elearning takes place in an open system (i.e., it extends the boundaries of learning to an open and flexible space where learners decide where and when they want to learn). Learners in an open, flexible and distributed learning environment need immediate attention and feedback on their work in order to continue their learning processes. We have to provide the best support systems for them so that they do not feel isolated and join the list of dropouts.

As we are accustomed to teaching or learning in a closed system, the openness of e-learning is new to us. In order to create effective environments for diverse learners, however, we need to jump out of our closed system learning design mentality. We need to change our mindset—that's the paradigm shift. In order to facilitate such a shift, and in response to the range of issues I saw in my research, I created the E-Learning Framework (Figure 5.2).

I found that numerous factors help to create a meaningful learning environment, and many of these factors are systemically interrelated and interdependent. A systemic understanding of these factors can help designers create meaningful learning environments. I clustered these factors into eight dimensions: institutional, management, technological, pedagogical, ethical, interface design, resource support, and
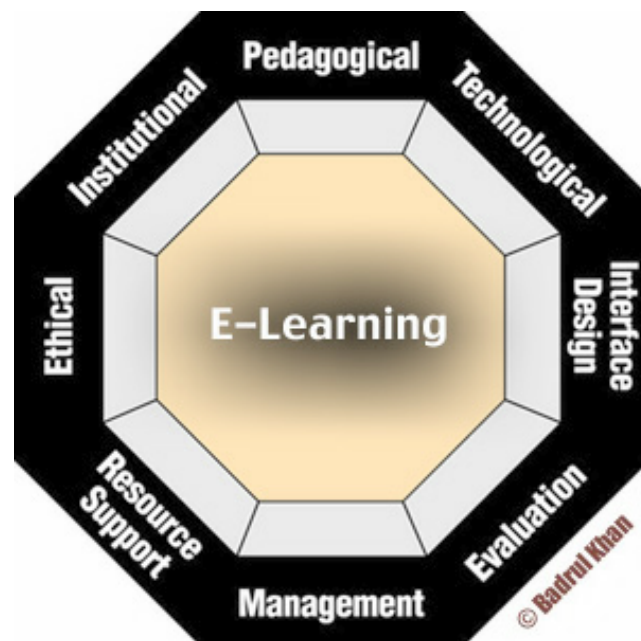
Figure 5.2. The E-Learning framework
The purpose of this framework is to help you think through every aspect of what you are doing
during the steps of the elearning design process.

evaluation (Table 5.1). Various issues within the eight dimensions of the framework were found to be useful in several studies that were conducted to review elearning programs, resources and tools (Khan, 2007; Khan & Smith, 2007; Romiszowski, 2004; Singh, 2003; Chin & Kon, 2003; Kuchi, Gardner, & Tipton, 2003; Mello, 2002; Barry, 2002; Goodear, 2001; Khan, Waddill, & McDonald, 2001; Dabbagh, Bannan-Ritland, & Silc, 2001; Khan & Ealy, 2001; El-Tigi & Khan, 2001;

TABLE 5.1: EIGHT DIMENSIONS OF E-LEARNING FRAMEWORK	
Dimensions of E-Learning	**Descriptions**
Institutional	The institutional dimension is concerned with issues of administrative affairs, academic affairs and student services related to e-learning.
Management	The management of e-learning refers to the maintenance of learning environment and distribution of information.
Technological	The technological dimension of e-learning examines issues of technology infrastructure in e-learning environments. This includes infrastructure planning, hardware and software.
Pedagogical	The pedagogical dimension of e-learning refers to teaching and learning. This dimension addresses issues concerning content analysis, audience analysis, goal analysis, medium analysis, design approach, organization, and learning strategies.
Ethical	The ethical considerations of e-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, digital divide, etiquette, and the legal issues.
Interface design	The interface design refers to the overall look and feel of e-learning programs. Interface design dimension encompasses page and site design, content design, navigation, accessibility and usability testing.
Resource support	The resource support dimension of the e-learning examines the online support and resources required to foster meaningful learning.
Evaluation	The evaluation for e-learning includes both assessment of learners and evaluation of the instruction and learning environment.

TABLE 5.2: SUB-DIMENSIONS OF THE E-LEARNING FRAMEWORK

INSTITUTIONAL	PEDAGOGICAL	INTERFACE DESIGN
Administrative Affairs	Content Analysis	Page and Site Design
Academic Affairs	Audience Analysis	Content Design
Student Services	Goal Analysis	Navigation
MANAGEMENT	Design Approach	Accessibility
People, Process and Product	Instructional Strategies	Usability Testing
(P3) Continuum	Organization	**RESOURCE SUPPORT**
Management Team	Blending Strategies	Online Support
Managing E-Learning Content	**ETHICAL**	Resources
Development	Social and Cultural Diversity	**EVALUATION**
Managing E-Learning Environment	Bias and Political Issues	Evaluation of Content Development
TECHNOLOGICAL	Geographical Diversity	Process
Infrastructure Planning	Learner Diversity	Evaluation of E-Learning Environment
Hardware	Digital Divide	Evaluation of E-Leaning at the
Software	Etiquette	Program and Institutional Levels
	Legal Issues	Assessment of Learners

Zhang, Khan, Gibbons, & Ni, 2001; Gilbert, 2000; and Kao, Tousignant, & Wiebe, 2000).

Each dimension has several sub-dimensions (Table 5.2). Each sub-dimension consists of items or issues focused on a specific aspect of an elearning environment. As you know each elearning project is unique. I encourage you to identify as many issues (in the form of questions) as possible for your own elearning project by using the framework. One way to identify critical issues is by putting each stakeholder group (such as learner, instructor, support staff, etc.) at the centre of the framework and raising issues along the eight dimensions of the elearning environment. This way you can identify many critical issues and answer questions that can help create a meaningful elearning environment for your particular group. By repeating the same process for other stakeholder groups, you can generate a comprehensive list of issues for your elearning project.

For example, *is the course sensitive to students from different time-zones (e.g., are synchronous communications such as chat discussions are scheduled at reasonable times for all time zones represented)*? This is an example of a question that elearning designers can ask in the *geographical diversity* section of the *ethical* dimension.

As we know, scheduled chat discussions may not work for learners coming from different time zones. In the U.S., there are the six time zones. Therefore, e-learning course designers should be sensitive to diversity in geographical time zones (i.e., all courses where students can reasonably be expected to live in different time zones).

The purpose of raising many questions within each dimension (see Table 5.2) is to help designers think through their projects thoroughly. Note that there might be other issues not included or not yet encountered. As more and more institutions offer elearning worldwide, designers will become more knowledgeable about new issues within the eight dimensions of elearning.

The E-Learning Framework can be applied to elearning of any scope. This "scope" refers to a continuum defined by the extent to which instruction is delivered on the Internet and hence must be systematically planned for. The weight placed on any elearning dimension or sub-dimension, or on any set of elearning items, will vary with the scope of the instruction. This continuum is described below, with examples, to show the type and scope of elearning activities and how their design relates to various dimensions of the framework.

At the "micro" end of the continuum,

elearning activities and information resources can be designed for face-to-face instruction in educational and training settings (e.g., blended learning activities). In the high-school physics classroom, for example, a teacher can use Shockwave simulations to support the cognitive work of analysing data, visualising concepts, and manipulating models. See, for example, the simulations available at Explore Science (http://www.explorescience.com.) The teacher would have to design activities that provide context for and elaboration of this highly-visual, Web-mediated simulation. In a traditional course, the ELearning Framework's *institutional* and *management* dimensions will matter much less than the *learning strategies* section of the *pedagogical* dimension which provides guidelines for integrating the simulation into the curriculum.

Further along the continuum, more comprehensive design is required for the complete academic or training course, where content, activities, interaction, tutorials, project work, and assessment must all be delivered on the Internet. Petersons.com provides links to a large number of such courses that are exclusively or primarily distance-based. (The Petersons database can be searched at http://www.lifelonglearning.com). Additional dimensions of the E-Learning Framework will be useful in designing such courses.

Finally, at the "macro" end of the continuum, the E-Learning Framework can serve the design of complete distance-learning programmes and virtual universities (Khan, 2001a), without a face-to-face component, such as continuing education programmes for accountants or network engineers. Petersons.com, again, provides links to dozens of such programs as well as to institutions based on such

programs. For example, designers of Web-based continuing education for accountants dispersed all around world would have to plan for every dimension of the E-Learning Framework in considerable detail. They would have to work with computer programmers, testing specialists, security professionals, subject-matter experts, and accountants' professional organisations. These designers would have to do everything from planning a secure registration system to considering cultural and language differences among accountants seeking continuing education credit.

As the scope of elearning design expands, design projects change from one-person operations to complex team efforts. *The E-Learning Framework can be used to ensure that no important factor is omitted from the design of elearning, whatever its scope or complexity.*

You might wonder: *Are all sub-dimensions within the eight dimensions necessary for e-learning?* You might also wonder: *There's a lot of questions here! Which ones do I need to address?* Again, it depends on the scope of your elearning initiative. To initiate an e-learning degree programme, for example, it is critical to start with the institutional dimension of the E-Learning Framework and also investigate all issues relevant to your project in other dimensions. In this case, a comprehensive readiness assessment should be conducted. However, to create a single elearning lesson, some institutional sub-dimensions (such as *admissions, financial aid,* and others) may not be relevant.

Designing open, flexible, and distributed e-learning systems for globally diverse learners is challenging; however, as more and more institutions offer e-learning to students worldwide, we will become more knowledgeable about what works and what does not work. We should try to accommodate the needs of diverse learners by asking critical questions along the eight dimensions of the framework. The questions may vary based on each elearning system. The more issues within the eight dimension of the framework we explore, the more meaningful and supportive a learning environment we can create. Given our specific contexts, we may not be able to address all issues within the eight dimensions of the framework, but we should address as many as we can.

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