INTERACTION, ADULT EDUCATION
AND THE WORLD WIDE WEB

by

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Abstract

The World Wide Web makes it possible for participants in distance education courses to interact with each other, the instructor and others. It provides access to a vast array of online resources that can become part of the materials for the course. Interaction was the central focus of the study. The study approached interaction from an enactavist perspective, a view of learning that suggests knowledge exists only in interaction (the possibility for shared action).

The two purposes of this study were to:

- inventory interactivity used in courses on the World Wide Web
- analyze the uses of interactivity in courses on the World Wide Web.

One hundred and five courses offered via the World Wide Web were surveyed. The courses could all be completed without face-to-face contact between learner and instructor or other course participants. Five potential locations for interaction were identified from the literature and observation: learner-instructor, learner-learner, learner-content, learner-media and learner-environment. Structured opportunities for learners to interact with individuals offline were also counted. The presence or absence of links to external Web sites was noted, and the number of external sites counted. Almost all courses provided for learner-instructor interaction. Learner-learner interaction was provided by e-mail, and by synchronous or asynchronous discussion spaces.

To analyze the uses of interactivity within the courses, the assignments required for each course were examined. In most cases, traditional written assignments and examinations were used to evaluate participants. Few of the courses required interaction as part of an assignment. Few required participants to consult external Websites.

The study concludes with a discussion of ways in which the World Wide Web could be used to deliver courses designed according to the principles of adt education, and the issues (both technical and political) that this would raise.
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CHAPTER 1:
INTRODUCTION

The World Wide Web is a unique medium for distance education. It allows educators to combine learner-to-learner and learner-instructor interaction with access to the vast and varied resources of the Internet. This possibility does not necessarily require a new approach to distance education, but it does make new approaches possible.

Computer-mediated communication (CMC) and telephone conferencing began, over the last fifteen years, to break down the isolation of distance education students from each other. The recent popularity of the Internet and of the Web in particular has brought CMC within the reach of many more people than was the case prior to the mid-nineties. The World Wide Web allows increased possibilities for interaction, and has attracted adult educators to distance education online.

The concept of interaction is central in adult education. Writers in the field from Eduard Lindeman to Malcolm Knowles to Paulo Freire to bell hooks have based many of their ideas on the simple observation that adults learn by talking together. Lindeman (1926) called adult education friends educating friends. Knowles (1980) wrote about how important it was for the educator, and all participants in adult education, to acknowledge and learn from each other's experience. For Freire (1972) the conscientization of participants, the collective awareness of and understanding of their situation, was what separated true education from mere banking of information, and could only develop through collective discussion, with the educator as a guide. Hooks (1994) has written extensively about the importance of listening and of privileging personal experience in education (1994). For all of these writers, learner-to-learner interaction is as important as that between the instructor and the learner.
Recently theories of learning have begun to discuss the centrality of interaction in the way we learn. Social learning theory, social constructivism and situated cognition all involve a focus on the relationship between learners, teachers and the environment. An enactivist approach is focused on the collective development and diffuse nature of knowledge. It views knowledge as a process developed in interaction rather than as a substance that can be located or transferred between individuals. Enactivist theory goes beyond saying that interaction is important, or that our environment has an effect on the way we learn. Rather, it says that we are a part of our environment, body and mind, and that there can be no complete explanation of learning without recognizing that. Enactivist considerations of learning, knowledge and our relationship to and through it will provide the basis upon which adult education will be discussed in this study. This approach emphasizes the importance of the environment and culture of CMC, looking not just at the fact of communication or its lack, but the factors within the networked computer environment that influence the ways in which knowledge can be developed.

The crucial importance of interaction has caused many adult educators to view distance education as inferior to the face-to-face variety. Discussions of the learner in distance education frequently focus on the isolation experienced, or thought to be experienced, by learners. Writers about distance education frequently do not consider that support for learners could come from anywhere but the central educational institution delivering courses, usually in the person of the tutor. Until recently there has been little focus on helping learners interact with each other, or in helping them interact with their own personal communities. This illustrates two points about distance education provision that are important for later consideration of courses on the World Wide Web. First, it has historically been organized around a transmission model of teaching based in an objectivist world view, that is, organized around the idea that “knowledge” is a substance that can be
packaged and transferred from one individual to another. Second, it has privileged the role of the institution and the instructor as the guardian and/or creator of that knowledge. Thus the institution has been seen as the centre, and the learner as very much on the periphery.

Interaction, then, is a cornerstone of adult education, is important to theoreticians of learning, and has been historically missing, and perceived as a lack, in distance education.

Because of that perceived lack, the World Wide Web has been hailed by distance educators. The Web provides many opportunities for interaction, both between individuals and between individuals and information. It provides anyone who has access to it with the opportunity, no matter where they are located, to independently explore a vast amount of information. It breaks down the privilege of the centre, since, unlike a library the Web can be accessed from almost anywhere in North America and beyond, without time restriction. Software that works in concert with browsers can allow for learner-learner and learner-instructor interaction. These are some of the promises of the Web.

It would be naïve, however, to assume that all courses on the Web are being provided to improve access to education for isolated students. To begin with, relatively few people have the equipment to access these courses. A certain level of technical expertise is required, and can be a barrier. To some extent, the rush to the Web can be viewed cynically, as an attempt on the part of struggling post-secondary institutions to attract wealthy clients who might otherwise be beyond geographic reach.

Despite these difficulties, however, the Web does have tremendous potential for distance education. It can provide an opportunity for those who live in rural areas to remain in their own communities while simultaneously participating in group discussions and collaborative learning projects with others in similar settings or in urban areas. Courses on the Web can provide a valuable opportunity for learners to improve their ability to both access and assess the vast amount of information available in digital form. Education made
available via the World Wide Web is education that can exist outside the confines of existing institutions of formal education. There is potential for great flexibility and openness. Special interest groups, professional organizations, environmental groups, religious bodies, feminist organizations, individuals... all can provide courses at reasonable cost using the World Wide Web.

In spite of this potential, in actual courses currently delivered on the Web, many of the most oppressive aspects of schooling are reproduced. Electronic monitoring of learners' actions is straightforward, and almost any type of participation or action can be used for assessment purposes, whether that be the number of times a learner checks course notes, the quality of their contribution to a discussion group, or any other factor of their participation. This ability has both a benevolent and a sinister side. On the positive, it is possible for educators to provide individual encouragement and support to learners they identify as falling behind or experiencing difficulties. On the negative side, however, it allows for the development of a panoptic gaze (Foucault, 1975), where all work is required to be performed online, all actions can be traced and anything can provide the basis for assessment. It is this variety of purposes for interaction that is at the heart of this study.

The purpose of this study was to examine the nature of interactivity and the structures that make it possible in distance education courses offered via the World Wide Web. In particular the study had two purposes:

- to inventory interactivity used in courses on the World Wide Web
- to analyze the uses of interactivity in courses on the World Wide Web

Chapter 1 has provided an overview of the purposes and background to this study. Chapter 2 will explore the notion of interaction in more detail, within adult education and from an enactivist perspective. Chapter 3 will focus on the World Wide Web. Its development will be briefly considered, as will its place within a more general discussion.
of computers and education. Barriers and limitations to Web-based education will also be discussed. Chapter 4 will discuss the methodology used for the study, including the typologies developed, the method of finding courses to examine, and the way in which interactivity was defined and evaluated. Study findings will be reported in Chapters 5 and 6. The summary and conclusion in Chapter 7 will consider interaction both as technique and as politics.
CHAPTER 2:

PERSPECTIVES ON INTERACTION

The Concise Oxford 9th Edition (1995) defines interaction as "reciprocal action or influence". This provides a good beginning for a consideration of interaction. For education, "reciprocal" is the most significant word in this definition. "Reciprocal influence" suggests that not only will instructors influence learners, but learners will influence instructors and each other.

In distance education, "interaction" is more than learner-instructor communication. Discussions of interaction began by identifying three types: learner-content, learner-instructor and learner-learner (Moore, 1989). Learner-media interaction is also an important consideration when courses are completed entirely in a networked computer environment (Hillman, Willia & Gunawardena, 1994). Learner-environment interaction, the fifth type that has been identified, has rarely been discussed as a factor in distance education (Burnham & Walden, 1997). When it is mentioned, it is frequently viewed as a negative backdrop against which education may occur. However, the location of the learner within their environment is too significant to be ignored.

For the purposes of this study, it is important to remember that learner-learner, and learner-instructor interaction and, to the extent that content is provided online, learner-content interaction, are all mediated by technology in Web-based courses. The interaction I am most concerned with is "what happens between human beings, genuine subjects, individuals with the unique quality of being able to find a nearly infinite range of responses to any situation, as well as the ability to imagine completely new, unanticipated possibilities" (Carlsson, 1995, p. 242). Ironically, one of the most useful discussions considering person-to-person interaction was written about human-computer interaction. Laurel (1993) felt that the range of choices available, their significance (how much they
affected things) and how often choices could be made were the three factors that determined if a game or simulation was interactive or not. These three factors also apply to interactivity in courses. Interaction can be significant or superficial, possible at any time or strictly controlled, and frequent or infrequent. Her final test of interactivity, a sense that "[y]ou either feel yourself to be participating in the ongoing action of the representation or you don’t," (p. 20) can also be applied to courses. People may feel themselves to be part of a class, or they may not. The full significance of interaction goes beyond this, however.

**Interaction in Adult Education**

Most of the five forms of interaction identified have been discussed in the adult education literature.

**Learner-content Interaction**

Correspondence education, based primarily on learner-content interaction, is the oldest method of distance education. Correspondence education for adults dates back to the nineteenth century. This method has been important for increasing access to adult education, and for allowing learners to progress at their own pace. Dropout rates from correspondence education were high compared to face-to-face education.

**Learner-instructor interaction**

The basis of learner-instructor interaction in North American adult education is mutual respect. The influential writings of Malcolm Knowles exemplify this. Knowles based his discussion of interaction between learners and instructor (and between learner and learner) on his understanding of adult psychology. He characterized adult learners as independent and self-directed. They each brought a wide range of knowledge and experience to the classroom. This meant, for Knowles, that the methods and techniques used for children were not appropriate for adults. Rather than pedagogy, an approach which he called andragogy was necessary for adult education (Knowles 1970, 1980).
Learner-learner interaction

Allowing and encouraging learners to share their knowledge and experience is central to the techniques of adult education. Eduard Lindemann (1926), writing some 50 years prior to Knowles, also insisted on the importance of interpersonal interaction in adult education. A major concern for Lindemann was the maintenance and extension of democracy. If the democratic system was to work, people had to become better at participating in groups, and in communicating their ideas and ideals. Lindemann viewed education as a crucial part of any movement for social justice. His description of the adult education process as friends educating friends indicated what he saw as the essential equality between learners and instructors.

The insistence that dialogue is crucial to the education of adults does not come simply from North America. The late educator Paulo Freire (1970), whose writing and work in Latin America and elsewhere has been a basis for the movement for critical pedagogy, based much of his method of education on people sharing their experiences and perceptions. Under the guidance of facilitators, community members discuss their situation and learn a new way of looking at their place in the power structure. Freire’s (1987) method is ostensibly to help people achieve literacy, but his focus was on, as he phrased it, both reading the word and the world. When learners have learned to read the world, then the process he called conscientization has occurred. Through sharing of experiences and critical examination of their interpretations of those experiences, people become more accurately aware of their situation and empowered to change it.

Many adult educators refer to Freire’s work, and base their own understanding of the importance of interaction on it. For example, the American educator bell hooks (1994) regards Freire as one of her mentors. She has written extensively about the need for adults in classrooms to share experience, recognizing the importance not only of theory but of the
special knowledge that comes from that experience. She referred to those who bring personal knowledge of oppression to the classroom as people who bring a great gift to the others with whom they study.

In various ways, then, person-to-person interaction is seen as an important part of adult education. There is no agreed-upon definition of “interaction” in use within the field, but there is an assumption that those communicating are equal. An instructor or another learner may know more about a particular subject, but differences in expertise do not alter the value of the individual. Following from that assumption, those involved in adult education are expected to listen respectfully and critically, and to learn by participation in dialogue.

**Learner-media interaction**

Since most writings in the adult education field are based on a face-to-face model of education, there is little discussion of learner-media interaction. For this study, learner-media interaction is part of the context of all other activities. The extensive writings on computer-mediated communication (CMC) and distance education, and on the cultural role of CMC in general, will be considered in Chapter 3.

**Learner-environment interaction**

The adult learner is defined as someone whose major occupation in life is not being a student, but rather lies in fulfilling the roles of adulthood. Given the importance placed on recognizing and respecting the learner's experiences, adult educators have at least suggested considerable respect for the environment in which those experiences occur, but there has been little direct discussion of it.

In Chapter 6, reporting findings of the study, these five types of interaction (learner-content, learner-instructor, learner-learner, learner-media and learner-environment) will
provide a framework to examine ways of organizing distance education delivered via the World Wide Web.

**Interaction and learning**

The commitment of adult educators to the notion of equality and shared power in interaction arises as much from a philosophical or political position as from any particular educational theory. However, the idea that person-to-person interaction is a crucial component of the learning process is supported in various theories of learning.

The idea of situated learning, for instance, focuses on the importance of the learner's interaction with a specific community of practice (Lave & Wenger, 1995). The social nature of learning is crucial. As people begin to learn a new skill, they are on the outskirts of a group of expert practitioners. As learners, their understanding of the area of expertise is minimal. They can join in the experts' activities, but only in a limited way. This "joining in" is the legitimate peripheral participation that Lave and Wenger see as the first step in learning. Their work does not focus on learner-instructor interaction in a classroom setting. They are concerned with learning in any environment. Learner-learner, learner-content and learner-environment interactions are most significant to this conception. (Learner-learner interaction would have to be understood here to include interactions between learners at different levels of expertise.)

Social constructivism also addresses the importance of learners' experiences, suggesting that people first develop knowledge in interaction with others, then construct that knowledge within themselves. Here more emphasis is placed on learner-instructor interaction. The instructor aids the learner in recognizing weaknesses and distortions in the knowledge schema they have developed, based on their own extensive understanding of the subject area. Learner-learner interaction provides an opportunity for learners to examine their knowledge in comparison with others. "From a learner-centred and interaction point
of view, learning activity is not a computation or manipulation of representations, learning is constructing meaning from information based on a human capacity to make sense and to share meanings with someone" (Cerratto & Belisle, 1995, unpaginated). The learners’ interaction with their environment is somewhat less directly important. Learners’ experiences will have led them to develop individual knowledge schemas, and it is on these bases that new knowledge is constructed. There is little focus on the learner’s environment per se.

An enactivist approach

An enactivist approach suggests that a commonality in these conceptions of learning is that they all treat “knowledge” in one way or another as a thing or substance. Accordingly, they are all concerned with the location of this knowledge. For the constructivist, knowledge is located within the individual knower. Situated cognition implies that knowledge is something held by one individual and absorbed by another over time. Much of the discussion in writings on situated cognition focuses on the master-apprentice relationship, suggesting at least that there is some thing, The Knowledge, to be acquired before the novice becomes expert (Brown, Collins & Duguid, 1989). An enactivist perspective, by contrast, defines “knowledge” as the potential for shared/collective action (Varela, Rosch & Thompson, 1996). It is not a substance to be located within an individual or group, but rather is inextricably linked with action. A shorthand way of saying this is “knowing is doing is being.” Like social construction and situated learning theories, enactivist theory suggests the “... learning is conversation, and the thinking and intelligence of a community of performers or learners is distributed throughout the group” (Jonassen, Collins, Campbell, & Haag, 1995, p. 9).

Some cognitive theories suggest that the environment or external world forms the individual. Behaviourism is one example of this approach. Others imply that the individual
forms or creates the external world (as constructivists and others who hold a subjectivist ontological perspective maintain). Enactivism instead suggests that the external and the internal, the individual and the environment, co-emerge. One specifies the other.

Enactivism is rooted in a number of seemingly diverse disciplines, including ecology, phenomenology, chaos theory, complexity theory and eastern, particularly Buddhist, philosophy. Drawing on these resources, it attempts to overcome the Cartesian split between mind and body, and to see the knower as an embodied being whose physical situation and cognitive responses are inseparable. This redefines “knowledge” as being a process rather than a substance, and has profound implications for education. Knowledge, and the subject matter studied, is created in the interaction and interplay of the group. A course or lesson involves extensive and playful interaction between learners and instructor, with the instructor participating in the play.

[A lesson designed on this basis] is a joint project, one in which the learning objectives are identified collectively. In retracing the events of [a math] lesson it becomes apparent that it is not so much the particular choice of activity—although the choice is certainly important—as it is the opportunity for interaction that contributes to the flow, the rhythm of the mathematics...

One idea cannot be separated from another; emerging conceptions exist in the realm of shared action (Davis, 1996, p. 224).

With an enactivist approach, all forms of interaction are significant. Learners and instructors together enact knowledge. The content they study, the media used and the environment they are part of are all integral parts of the educational experience. Individuals can explore and play with ideas on their own, but the coming together of individuals provides the greatest opportunity for learning. Interaction is not just debate, but a chance to explore ideas and collectively develop new ones. (In a sense this is recognized in distance
education at the administrative level. It is widely held that a course team will develop a more innovative and better course than any individual, however knowledgeable, might produce.

If interaction is to provide the kind of opportunity for play and exploration central to learning, it must be assessed sensitively if at all. In particular, reference must be made to the context of learning. It might not be appropriate to view a learner's comments in a discussion in isolation from the comments made by others in the group, for example. Comments aimed at creating a cooperative environment might be as valuable to the collective development of understanding as a more "content-heavy" comment which might look more worthy in isolation. This perspective also has implications for the way in which facilitators or instructors allow discussion to proceed. If new ideas are to be developed in the interactive process then a flexible approach to what is on-topic or relevant must be taken.

**Power relations**

Enactavism suggests that the role of the instructor is to participate in the exploration of ideas and act as a facilitator. Unfortunately, writers in this tradition have not yet addressed the issue of power and control within the educational environment. It is here that the emancipatory philosophy of adult education can be brought to bear. The traditional assumption that the teacher is the central source and holder of knowledge helps to vest considerable power in the position. Writers in adult education, insisting on the importance of what adults bring to the classroom, challenge this view of the teacher as sole authority. If learning takes place most readily in an interactive situation, and "interaction" means "reciprocal influence or action," clearly knowledge cannot be positioned on only one side of the teacher/student transaction. Yet to ask those in authority to recognize that their claim to exclusive control of knowledge is erroneous is to expect them to surrender power in the
interests of more egalitarian education. The tradition of adult education, particularly as it informs critical pedagogy, provides a framework to consider this.

In one sense, distance education may be less prey to power imbalances than face-to-face education. At a distance the control of the educational institution over the learner is weaker, and opportunities for individual reflection and action perhaps greater (Gillard, 1993). On the other hand, distance education may promote a kind of closure, rather than open exploration, because of the explicit pedagogy contained within course materials (Harris, 1987). The structure and design of traditional distance education courses draws on neo-behaviourist conceptions of learning outcomes. It clearly places Knowledge in the centre, residing in the materials and the instructor. Even without this orientation, distance education poses a challenge to the instructor or tutor who wants to adopt an approach that involves individual learners’ experience. Course materials for distance education are developed in advance, and in a way intended to guarantee thorough coverage of a subject. There may be little flexibility possible, particularly if a pre-set examination is used.

Traditionally, learners in distance education have been more dependent on course materials than those in face-to-face settings. Such learners usually have reduced access to alternative views of the material being presented (Reid & Sork, 1990). Recent increases in person-to-person interactivity in distance education have altered this, and the range of materials available on the Web can modify it still more. However, course materials can still serve to “drown out” alternative voices, particularly if assessment is linked exclusively to the course materials provided.

**Interaction in distance education**

In recent years opportunities for learner-instructor and learner-learner interaction have been added to many distance education courses. There seem to be two major reasons for this. First, technological developments such as telephone conferencing, video
conferencing and computer-mediated communication have made it easier to provide possibilities for such interaction. The second reason is harder to analyse. Perhaps there has been some shift in instructional design circles from a purely objectivist approach to a view informed by constructivism, or perhaps the increasing possibilities for interaction have attracted educators holding such a view to the field of distance education. Whatever the underlying reason, this shift in ideas about learning has meant a new focus on providing opportunities for learners to make and test meanings. Opportunities for learner-learner interaction are particularly appropriate in this process (Duffy & Jonassen, 1991). It is important, though, not to simply assume that a constructivist idea of learning is behind every course that includes learner-learner interaction among its techniques.

**Traditional distance education**

The traditional model of distance education is illustrated in Figure 1. In this arrangement, an institution provides information to a learner (whether via print, radio, television or some other medium). The learner studies the material and sends back a response, in the form of an essay or examination, and their understanding is judged. The judgment is often a comparison between the “knowledge” sent out and that which is returned. In countries like Canada where distance education has been largely associated with text-based correspondence education, there has been little opportunity for learners to interact with each other or with the instructor, and scant encouragement for them to interact with anyone else. This traditional model suggests an information-transmission conception of the learning process (Pratt, 1998). It also emphasizes the centrality of the instructor to learning, by describing the learner as an isolated individual. This traditional view is exemplified in Mood (1995):

Truly, a distance education student must clear formidable hurdles—of technical equipment, family support, pressure at work, and a sometimes
overwhelming feeling of isolation and aloneness. Still, with careful planning on the part of everyone involved, distance education students can avoid some of the pitfalls. Teachers must state clear objectives, must divide and present course material in manageable chunks of information, and must avoid frightening the student at the outset with a seemingly impossible course (p. 105).

Figure 1 Traditional distance education

**Learner-learner interaction**

Various opportunities for learner-learner and learner-tutor interaction have been introduced into this model in recent years (see Figure 2). Telephone and video conferencing, for example, are frequently-used components of distance education courses. Learners meet at local centres where the technology is available and are connected to the instructor and other remote sites. This has been particularly popular in the United States and to some extent in Canada, frequently taking the form of a discussion that supplements other activities.
A variation of this is the lecture-format class delivered via video conferencing, a popular vehicle for distance education in the United States. Interaction among learners is certainly increased in this model, although some of the flexibility of more traditional distance education is lost. Interestingly, researchers have found that the interaction occurring at the remote sites is often not directly related to the lecture being delivered but focuses on clarification of confusion, discussion of assignments, and socializing (Burnham & Walden, 1997). Another option for interaction, particularly significant in Britain at the Open University, and in Australia and Asia, is at face-to-face tutorials or summer schools.

Each of these structures suggests the instructor is central to the learning process. It is rare in the literature of distance education to find any indication that learners could benefit from working in groups that did not involve an instructor, or from interacting with individuals in their communities to develop understanding.

**Project-based distance education**

An exception to this is project-based learning. This rarely-used model for distance education is defined as "a learning activity in which students develop an understanding of a topic, issue or body of knowledge by working on actual (or simulated) problems or issues
and in which students also have some degree of responsibility for designing and planning
the learning activity" (Morgan, 1994, p. 114). Students may work with non-students in
their own communities to complete a subject-based project. For example, a history project
could involve visiting a local archive and working with the archivist, talking to long-time
residents and visiting graveyards to develop a picture of local life in an earlier era. The
instructor in this case would provide guidance for the procedures, but the learner would
create the content in interaction with their own community (Figure 3).

Project-based learning requires an administrative recognition that instructors are not
simply shirking their tasks if students are required to provide materials for the course
(Harasim, 1996, p. 232). It can be particularly challenging when done collaboratively at a
distance via computer-mediated communication (Fjuk, 1995).

![Diagram of Project-based Distance Education](image)

**Figure 3** Project-based distance education

Project-based distance education might be a good approach for educators who wish
to de-emphasize their own role, and place emphasis on the learner. The predominance of
single-source, text-based information in distance education pushes students towards an
emphasis on simply reproducing the seemingly seamless knowledge contained in the
course material (Harris, 1987). Project-based work may help learners to develop independence, appeal more to adult students than traditional means of assessment, and help learners develop collaborative skills (Morgan, 1994; Christiansen & Dirckinck-Holmfield, 1995). It may also be more in tune with how people learn. It could enable distance educators to overcome many of the concerns raised by the lack of interaction and student isolation that characterize more traditional approaches. It has remained marginalized and uncommon, however.

These models provide a visual summary of the ways in which interaction is discussed in distance education. In most cases, the learners' ongoing interactions with people and ideas in their own environments are not discussed by distance educators. Discussions of learner-media interaction have typically been closely linked to considerations of content. The extensive study of sequencing and presentation that comprise the bulk of the instructional design literature (see for instance Gagné, Briggs & Wager, 1992) comes closest to an examination of learner interaction with media. This is changing now, as interaction via computer networks gains importance in distance education. Chapter 3 discusses learner-media interaction in the context of the World Wide Web.
CHAPTER 3:  
COMPUTER USE IN DISTANCE EDUCATION

Computers are not simply tools, not merely the calculating machines or data storage systems envisioned by their inventors. They are culturally powerful objects, with which we can fall in love (Turkle, 1995). They are a medium that creates a non-spatial location for interaction, and beyond that they are the domain of cyberspace, an almost parallel universe where ideas lend non-copyright-protected immortality to their originators and inhabitants dream that the limitations of the human body and mind can be transcended permanently. Given the symbolic power of computers and the complex ways in which communication occurs through them, interaction by computer deserves careful consideration by educators.

Some of this consideration has been deferred in the apparent haste to adopt new technologies. The fascination of the old media with the new has helped to give those who are not wired a sense of being left behind. In education, "computer illiteracy" is seen as both threat and shameful secret. From the K-12 system to higher education, formal educational institutions have hurried to make their presence felt on the World Wide Web. Distance educators have been among the most eager proponents of computer use. They have suggested that computer-mediated communication, video conferencing and other forms of new media make a convergence between distance education and face-to-face instruction possible (Bates, 1997; Dede, 1996; Harasim et al., 1995; Seaton 1993).

For example, in a classically enthusiastic piece concerning the role of CMC in distance education, Kahle (1994) maintained that distance education has been consistently marginalized in American higher education, and that CMC provides an opportunity to reform distance education pedagogical methods and, by implication, gain respect within the academy. It can overcome student isolation, provide quick response on assignments and...
thus reduce learner stress, and allow educators to adopt educational theories which focus on learning as a social process. Harasim described a statistics class that, in its face-to-face mode, had students calculate various statistics using an existing data set. The online presentation first began by having students survey each other to produce a data set which was subsequently used to apply the statistics. Attributing the new approach to the online environment, she noted: “The students thus created the information that became the sample data for their practice” (Harasim, 1995, p.30). There is no reason why this could not be done in a face-to-face course, yet this is rarely noted by proponents of new technologies.

This chapter will begin to consider the impact of computer-mediated communication in distance education. It will focus on the effects CMC has on interaction between learners, and between learners and instructors. I will broaden the discussion somewhat and consider the issues raised by those examining computer mediated communications from perspectives outside of education. Looking beyond person-to-person interaction, I will consider the effect that the digitization and on-screen presentation of content has on learner-content interaction, and also the effect of extensive computer use for study on learner-environment interaction. Learner-media interaction, the learner’s interaction with the technology, is central to the use of computer-mediated communication. Here it will be discussed both in terms of access to the technology, and in light of issues of embodiment and gender. Since it is the World Wide Web that is the focus of this study, the chapter will begin by placing the use of the World Wide Web as a device for distance education against a broader historical background.

The World Wide Web

There were approximately 650,000 different Web sites in existence early in 1997 (Gray, 1997). This is an astounding number, given that the Web did not exist until 1993, and then in text-only form. The Web as we know it in 1998, with its system of largely-
graphical interfaces and hypertext links, came into existence in 1994 with the introduction of Mosaic, the first widely-available graphical browser.

The Internet grew out of American military interests. Originally run by the military, it was intended to provide a means of transferring information and allowing dispersed military and civilian researchers access to supercomputers. The earliest network, ARPANET, gave way to NSFNET, which was later joined by BITNET and USENET, among others. It is not easy to provide a simple summary of these interlocking networks, nor is it particularly relevant. It is sufficient to note that the history of the net is rooted in American military policy, and that educational institutions, particularly research labs but also universities and colleges, have been involved from the beginning. It is also noteworthy that, of the estimated 9.4 million computers linked to the net worldwide in 1996, 60% were located in the United States (Nature of Cyberspace, 1996). From being a small, military-based communication system, however, the Internet has grown to be something much larger and more anarchistic.

No single entity -- academic, corporate, governmental, or non-profit -- administers the Internet. It exists and functions as a result of the fact that hundreds of thousands of separate operators of computers and computer networks independently decided to use common data transfer protocols to exchange communications and information with other computers (which in turn exchange communications and information with still other computers). There is no centralized storage location, control point, or communications channel for the Internet, and it would not be technically feasible for a single entity to control all of the information conveyed on the Internet (Nature of Cyberspace, 1996).
This has a number of implications for those who wish to use the World Wide Web for education. First, the dispersed and unregulated nature of the Web makes it possible for anyone anywhere, given access to a server and the required technical skills, to create a course that can be viewed by anyone else with access to the Web. Secondly, the amount of information available is vast, and the Web itself provides no way to evaluate the quality of information. There is no universal process whereby posted items are refereed, as academic journals are refereed. (Online journals, of course, can be refereed; I refer here to general Web pages.) Thirdly, although the amount of information available is vast, it is also limited. By definition, material on the Web has to have been put there by someone with access to the skills and technology required. This eliminates most of the world’s population. The prevalence of English online and the exclusion of cultural ways of knowing that do not easily translate to the screen further constrain what is available (Diamond, 1997; Lockard, 1996). Yet the sheer volume gives the user of the Web the sense it is a link to all human knowledge.

**Learner-media interaction: access**

Perhaps 75% of the world’s population has no access to the telephone (Tabbi, 1997, p. 236). When we discuss the impressive increase in Internet access, and the rising use of computers generally, we would do well to remember this. In Canada, where virtually all homes have a telephone, Internet use is rising. British Columbia, according to a 1997 Statistics Canada survey, is the most wired province. Approximately 18% of all households have access to the Internet, significantly more than the national average of 13% and the lows of 10% in Quebec, Saskatchewan and the Atlantic provinces (“Canadian Internet use highest in B.C.” *Vancouver Sun*, November 28, 1997, p. E1 and E17). In British Columbia, Alberta and Ontario approximately 40% of all homes have a personal computer. This percentage is also less in other provinces.
Many universities and colleges provide a limited amount of connect time to students. At the University of British Columbia, for example, students dialing in can use up to ten hours per month. However, for distance education students, many of whom are located outside the immediate area of the university or college, the cost of long-distance access makes it unreasonable to take advantage of this. Instead most require a private local Internet service provider, at costs ranging from $20 to $40 for moderate monthly access. Poor and remote areas are not well-served by Internet service providers (Kirshenblatt-Gimblett, 1996). Add to this the usual fees for tuition and books and online education becomes an expensive option.

...[T]he obvious so clearly needs restatement: cyberspace is expensive space.... Access to cyberspace is effectively divided between self-financed, institutionally-financed, and unprotected non-access.... A few excepted classes exist, but a middle-class income is the basic password to Internet access. Nonetheless cyberspace has arrived virtually unchallenged as a democratic myth, a fresh field for participatory citizenship (Lockard, 1997, p. 220).

This is how cyberspace has been hailed in distance education, where the individual costs of the “dynamic, electronic learning environments” are rarely mentioned (Kahle, 1994).

Technology can present a barrier to would-be students in several ways: not only the cost of the equipment itself, and reasonably-priced access to an Internet service provider, but also access to a private telephone line (still not a given in many rural areas) and access to the telephone for sometimes-extended exclusive use (a problem for anyone who lives with others, especially teenagers) (Bates, 1997). Lack of access, or uncertainty of technical access, presents a problem not only for the individual but for classes based on CMC, since conversations require a certain critical mass to be effective (Owston, 1997).
Training and access to assistance with computer communications is another significant barrier to distant students. The Web's great technical advantage is that, by using a single standard display method, it makes it possible for users of many different types of computers to access the same data. It also means that students in a class may be using several different browsers and computers with different operating systems. It is unlikely that most instructors would be able to help inexperienced students with connectivity problems.

The Web is a new medium, less than five years old at this writing. Students have varying degrees of expertise with it, and course designers must keep this in mind. The experience of an astronomy professor at Indiana University Northwest provides a case in point.

Many of [the students] had computers at home and were comfortable Websurfing, a handful had actually written their own Webpages, but the large majority had never seen a Webpage before taking my course. I decided that projects and homework [involving extensive Web use] would require too many additional skills that the students didn’t have and the course really wasn’t designed to teach and therefore I had to content myself with only showing the students how to access the class Website and follow links (Kayany, 1997).

Clearly, a course relying solely or largely on computer-mediated interaction rather than a face-to-face component cannot simply rely on following links. When more complicated technical requirements exist, the necessity for expertise of both instructor and learners is also increased, as is the need for technical support.
Educators look at CMC

Claims for the Internet go far beyond the idea that it is a convenient delivery method for distance education, suggesting that “… the information-technology revolution is creating a new form of electronic, interactive education that should blossom into a lifelong learning system that allows almost anyone to learn almost anything from anywhere at any time” (Halal & Liebowitz, p. 21). It is this sort of claim, and the promise represented by the Web, that has attracted the interest of adult educators. The Web conjures up a vision of lifelong education as a reality, with electronic universities providing access for all (Spender, 1995).

Although this utopian vision has not materialized, CMC has grown in significance in both face-to-face and distance education. At UCLA, for example, the College of Letters and Sciences made provision of a home page and chat room a requirement for all its more than 1,000 courses in fall of 1997 (Young, 1998). Courses at the University of British Columbia make use of listserves for student discussion (for example, EDCI 572 and ADED 583). A wide range of departments from classics to human kinetics use the Web and other multi-media delivery tools to provide course materials (“Innovations: new initiatives in educational multimedia at UBC”).

In distance education, CMC is not seen simply as a supplement to traditional methods, but rather a new form, one that “… is introducing a new pedagogy, one which stresses learning as a social, collaborative process” (Kahle, 1994, not paginated). CMC, it is argued, allows for an emphasis on group process that was impossible prior to its development, and overcomes the isolation that has been the lot of distant students. Much of the significance of the use of CMC in distance education is assumed to be the different models for learning it makes possible. It is a consideration of the extent to which these
different models are in evidence, given the claims made about them, that provided a major impetus for this research.

What we are seeing with these new learning environments, particularly but not exclusively at a higher education level, is a transition from traditional models of teaching, based on a model of information transmission and comprehension through the lecture mode, through more constructivist and collaborative learning models, but still with strong referents to face-to-face teaching, such as seminars and discussion groups, to completely new paradigms of learning, such as problem-solving and decision-making, through the use of multimedia simulations and games. Furthermore, this transition is technology-related (Bates, 1997, p. 94).

According to Harasim (1990) online education combines attributes of both distant and face-to-face modes of education. Like face-to-face education, it allows for group communication. Like distance education, it is time and place independent (Harasim, 1990). This makes it a unique environment, and by implication one that is better than either of the other two.

Convergence, or lowering barriers between distance and face-to-face education, comes about “…primarily because of the opportunities that CMC provides distance learners for discussion, collaborative work, and the development of autonomy in learning, and also because of the potential for building a sense of community among the participants in large-scale distance education institutions” (Mason & Kaye, 1990, p. 23). The idea of this convergence alone makes CMC significant and worth investigating, but the extreme enthusiasm of influential researchers and educators in the field makes it even more so. For example, Harasim wrote in 1995, “There is no subject matter that cannot benefit from being taught partially or wholly online” (p.27). Some argue the introduction of computer-
mediated communication into the world of distance education represents a paradigm shift (Mason & Kaye, 1990).

**Distributed learning**

Paradigm shifts don’t occur into empty space (Chesher, 1992). If a shift towards a convergence is occurring, the shift is into the terrain of existing distance education, with its focus on student independence and self-pacing, and that of face-to-face education with its idealized vision of personal connection between wise professor and student. This new, hybridized version of education is defined as distributed learning, an “alternative instructional paradigm” made possible by “emerging media, messages, and experiences” (Dede, 1996, p. 4). Bates uses a definition developed at the Institute for Academic Technology at the University of North Carolina.

A distributed learning environment is a learner-centred approach to education, which integrates a number of technologies to enable opportunities for activities and interaction in both asynchronous and real-time modes. The model is based on blending a choice of appropriate technologies with aspects of campus-based delivery, open learning systems and distance education. The approach gives instructors the flexibility to customize learning environments to meet the needs of diverse student populations, while providing both high quality and cost-effective learning (Institute for Academic Technology, University of North Carolina (March, 1995) cited in Bates, 1997).

However as Bates noted, the idea of convergence does not eliminate the different kinds of services distant students may require.

In the new world of distributed learning, collaboration is an outgrowth of interaction and can be viewed as both a precondition and goal of learning. From an adult
education perspective exciting changes are made possible. Computer support can enable project work and allow learners “... some kind of a safe base, a playground (or an emancipatoric room) where they may practice the academic discourse, exchange and explore their multiple backgrounds, learn about their different interpersonal rituals for group work and the different perspectives on the subject matter” (Christiansen and Dirckinck-Holmfeld, 1995). Sustained interaction and collaboration can be an intentional by-product of online courses, and has implications for continuing professional education of all types (Shotsberger, Smith & Spell, 1995).

It has been suggested that the online environment may provide a better-than-live space for collaborative work, in part because the forum encourages learners to speak more (Bonk & King, 1995). For this to be true, instructors, particularly those who are accustomed to lecturing, must learn new ways of teaching, and move “from the podium to the sideline” (Parker, 1996). The new organization will alter instructors’ status. “Teachers will not have the status of being a knower, an authority figure, the active agent in the process, but will be called on as back-up for the questing students” (Spender, 1995, p. 115).

Asynchronous conversations may allow groups of learners to develop ideas interactively, over time. This provides opportunities for students who take longer to formulate comments to participate in conversations in a way they might not be able to in a face-to-face classroom, and also affords the opportunity for everyone to reflect on the conversation. This can add a richness to dialogue that may not be present in a fast-paced, face-to-face seminar. “The need to verbalize all aspects of interaction within the text-based environment can enhance such metacognitive skills as self-reflection and revision in learning” (Harasim, 1990, p. 49). The asynchronous environment allows for assignments that encourage students to share their thoughts even if they are working on different
projects. Students can be required to respond to each other's essay drafts or other assignments for example (Sherman, 1995). It is important to remember here that although technology makes this perhaps more convenient for face-to-face courses and lessens the lead time necessary for distance education, similar assignments could be incorporated in either model without the use of computer technology.

Students as well as instructors must learn to function in collaborative learning environments. Whatever else students have learned in their previous educational experiences, they have usually learned that "education" means education via a transmission model, where the instructor is responsible for presenting information and they are responsible for learning it (Parker, 1996). A switch to collaborative learning, and to learning based on interaction with peers, can be painful (Perkins, 1991).

**Education in the electronic panopticon**

Although the potential for de-centering the instructor/institution in a Web-based course is often suggested as an outcome of education on the Web and via other forms of CMC, the techniques by which it is accomplished are rarely discussed. Rather, there is a sense that the paradigm shift will occur automatically with the introduction of learner-learner interaction. In some instances, however, the instructor's position at the centre may be reinforced. Some authors have suggested an appropriate use of computer technology is to strictly monitor student interactions, using the existence and content of such interactions as a basis for assessing student work. This idea of an all-seeing instructor, bringing potentially constant surveillance to bear on isolated students, suggests an electronic version of Foucault's panopticon (Boshier & Wilson, 1998; Foucault 1975/1977).

Foucault based his interpretation of the panopticon on the writings of eighteenth-century author Jeremy Bentham. Bentham originally proposed the panopticon as a new kind of prison. Discipline would be based on observation rather than force. A central guard
tower, cloaked in darkness, would allow authorities to observe prisoners at any time, without being seen themselves. Foucault used this idea as a basis for his extensive discussion of the role of surveillance and discipline in the exercise of power. In the panopticon, he noted, prisoners would modify their behaviour based not simply on observation and fear of subsequent punishment, but on the knowledge that they might be observed.

Some authors have suggested that computer-based communication enables a kind of electronic panopticon, allowing extensive surveillance of all who use the media to communicate (Spears & Martin, 1994; Zuboff, 1988; Robins & Webster, 1988). Surveillance and discipline can be immediate or delayed, since text on a network can never be truly private and can never be assumed to have been destroyed (Descy, 1997; Iseke-Barnes, 1996). This more general issue is not my focus here. Rather, my concern is with the effect that a panoptic course structure, in which all (or at least most) learner-learner interaction is open to review by the instructor, may have on the quality and nature of education and learning.

The application of a panoptic structure to education does not require an electronic environment. "The typical structure of the lecture theatre from the centre of which the lecturer's gaze can engage with that of any student is similar in design and intention to the Benthamite Panopticon ..." (Gillard, 1993, p. 184). Yet if the lecture hall is replaced by a constantly-observable electronic environment, such as a conferencing system or listserve, the resemblance to the panopticon is even more striking. Instructors can monitor learners' activities and communications online in a way that is practically impossible face-to-face. This is part of what can happen when formerly fleeting comments are turned into a fixed, reviewable text.
Interaction in the panopticon is always constrained by the knowledge of surveillance and discipline. This limitation represents, from an enactivist perspective, a limitation to knowledge, since knowledge is the ability to act and interact collectively. An ideal course from an enactivist perspective allows instructor and learners to enter together into a spirit of exploration and play, examining ideas and building a knowing community (Davis, 1996). The evaluation of student learning remains part of the instructor’s role, but only part. Participation within the learning community is more significant. An instructor who accepts a panoptic model, positioning him/herself chiefly as evaluator, would seemingly be abdicating this more playful aspect of instruction.

Few instructors would suggest that the teaching role was solely one of evaluator or judge, but the structure of some online courses suggests that this is primarily the position they occupy. For example, courses may require students to exchange e-mail with the instructor, and to participate in asynchronous discussions with others. These discussions can be observed by the instructor. If marks are awarded for both of those activities, from the perspective of the student all officially-sanctioned interpersonal communication within the course is a kind of performance to be judged. There may be little or no opportunity to “just talk,” exploring ideas that may not be well understood, since to reveal a lack of understanding might invoke punishment in the form of lower marks.

If all comments are examined by the instructor, and learners are aware of this intervention or think that it might happen, Foucault’s analysis suggests that learners would modify their comments to match their perception of instructor approval. It is this proclivity to apply surveillance and discipline to oneself that is most pernicious, and is the antithesis of education. This kind of environment severely limits learning. Learners are unlikely to reach any original conclusions, or risk voicing them. Discussion is likely to focus on well-worn tracks suggested by the originally-provided course materials. Giving marks for
participation, considered with the panopticon in mind, raises serious questions. Many of these questions arise in face-to-face education as well, but they are more urgent in a computer-mediated environment.

It is not just the learners who can be observed. “One way that the information panopticon departs from Bentham’s principle is that it is hierarchically organized. At every level of the organization, the observer is as likely to be a target of technical control as its vehicle” (Zuboff, 1988, p. 337). In the educational setting, although the instructor is clearly in a position to observe the learner, the instructor can also be watched. This can have practical results. For example, the time required for instructors to respond to learners’ questions by e-mail can be considerable. One instructor estimated spending four to five hours per day answering student e-mail (Barnard, 1997). The time this requires would be invisible to administrators evaluating the instructor’s performance. Learners’ complaints about slow responses, however, would be visible, whether sent directly to the administrators via evaluation forms or observed in discussion groups.

Learners in online courses may find themselves in a contradictory environment, where collaborative learning is posited as best for learning and simultaneously used as a means of evaluation. “Online group learning is an opportunity to see what students have learned and how they understand and apply the concepts... Monitoring of group activity should be unobtrusive so as not to undermine the group dynamics or the process of discovery and learning” (Harasim, 1995, p. 181-182). It is naïve to imagine that this “unobtrusive” monitoring would not effect learners.

**Technological determinism**

Historical narrative (from the printing press to virtual reality) suggests technological change is inevitable, and unfolds logically (Chesher, 1992). The same type of historical narrative is found in writing about distance education, the story of which begins
with correspondence education and proceeds forward to video conferencing and computer networking. The optimism many educators feel about the widespread availability of electronic resources, and which I share to some extent, can easily blur into a kind of technological determinism: rather than viewing the resources as socially-rooted technological developments, authors assume that the technologies themselves are causing the changes they observe in their use. An example:

The growth of resources available on the Internet will develop self-directed learners. This will occur simply because the Internet offers something for everyone (no matter what their interest may be) and because it is an effective and efficient way for people to connect with others who share mutual interests (Cook, 1995, p.37).

This tendency towards technological determinism is pronounced in the work of Harasim, who reports that among other advantages learners and teachers find in using online networks for education, “education becomes learner centered” and “learning becomes self-paced” (Harasim, 1996, p. 15). In some cases, the introduction of technology may provide the impetus for instructors to question and modify their instructional approach (see for example Alley, 1996). However, new technologies can also be adopted without critical reflection (Burge & Haughey, 1993).

The impact of technology depends on the society and conditions where it is introduced (Bromley, 1997). New technological possibilities for interaction do not create the interaction, nor do they determine how it is used. Computer-mediated communication and distance education via the Internet are social phenomena, and influence broader social conditions. The issues that arise in the new virtual space created by CMC are not all technological. They are also social and political, and technological solutions to political
problems are unlikely (Chesher, 1992). Some rather cynical observers see the problems the computer creates and ignores as being far greater than those it can solve.

The computer is, in a sense, a magnificent toy that distracts us from facing what we most needed to confront - spiritual emptiness, knowledge of ourselves, usable conceptions of the past and future. Does one blame the computer for this? Of course not. It is, after all, only a machine. But it is presented to us, with trumpets blaring... as a technological messiah.

Through the computer, the heralds say, we will make education better, religion better, politics better, our minds better - best of all, ourselves better.

This is, of course, nonsense, and only the young or the ignorant or the foolish could believe it (Postman, 1990, not paginated).

The assumption that a new method is inevitably better than an old one pervades writing in distance education. For instance, an interesting collection of studies suggesting that no significant difference exists between the effectiveness of face-to-face and technologically-mediated instruction can be found on a Web site called the “No significant difference phenomenon” (Russell, 1997). It includes approximately ten examples of studies involving CMC, as well as many more examples of televised and videotaped course delivery. Most of the studies documented study the difference between face-to-face and distance education delivered by various media. In each case students taking courses via the mediated method match the achievements of those studying the same material face-to-face. Russell, the owner of the site, clearly objects to the inevitable flow of improvements suggested by the narrative of technological determinism:

The No Significant Difference Phenomenon listing will no longer be compiled when the futility of conducting such studies is recognized and their production ceases. Until that time, we must continue to push for
acknowledgment of diversity in student learning styles, and the need to accommodate learners with a variety of technologies, rather than mindlessly hailing each new distance education technology as a boon to improving instruction (Russell, 1997, not paginated).

Learner agency

If a paradigm shift towards learner-centred distance education was to occur, distance educators would have to develop a new understanding of learner agency and individual power. Learners need autonomy if they are to learn by discussion and exploration in collaborative environments, but this is rarely discussed in the distance education literature. There is a huge literature that discusses individual agency and computer-mediated communication outside education, however.

Some have suggested that Multi-User Domains (MUDs), hypertext and other collaborative environments break down the authority of the author. This may be similar to the way the authority of the teacher would be reduced in a truly collaborative environment. “Since MUDs are authored by their players, thousands of people in all, often hundreds at a time, are all logged on from different places; the solitary author is displaced and distributed” (Turkle, 1996, p. 185). Rather than focusing on the displacement of the author, it is more useful in educational terms to think of the distinction between “authority” and “agency.” Like the players in a MUD, the participants in a course may have almost unlimited freedom to explore the subject of the course, creating new knowledge and exploring that which already exists. Like the high-level wizards in the MUD, the instructor has the ability to destroy the world by introducing situations that render collective exploration meaningless. The authority of authorship may be distributed in this environment, but it does finally reside somewhere.
One useful distinction between authority and agency, or authorship and participation, uses the analogy of simulation games (Murray, 1997). The author is the person who invented the simulated world or situation. Individual participants in the game may take actions that the author did not specifically expect or script, thus providing new and unexpected content. The participants in this case have agency, that is, the power to act on their own behalf within the broadly-defined constraints developed by the authority. This idea of agency and authority is an intriguing one for those developing distance education courses in a computer-mediated environment. If a course was truly to be learner-centred, granting agency to the learner, pre-planning would need to focus on providing a suitably expansive world for the learners to explore and experiment with, rather than providing a pre-determined idea of specific steps and learning outcomes they were to take. The implications for this interpretivist approach are huge. If collaborative, co-operative, learner-centred education is taken seriously it could render an industrialized approach to distance or face-to-face education impossible. In traditional distance education courses, with limited opportunities for learner input and limited learner agency, the range of possibilities that could be explored were equally limited. If courses become learner-centred and the area of exploration expanded, considerably more subject expertise as well as facilitation expertise will be required on the part of the instructor of distance courses.

Online course developers seem to be several years behind the designers of online interactive environments. The significance of agency to the role of the designer was discovered there some years ago. Writing about the Habitat experiment, an early interactive online environment, Morningstar and Farmer noted, “The more people we involved in something, the less in control we were. We could influence things, we could set up interesting situations, we could provide opportunities for things to happen, but we could not predict or dictate the outcome” (1991, p. 288).
Distributed learning in the economy

The skills developed in distributed learning, working with team members at a distance and selecting information are, according to some authors, appropriate for the new information-based economies (Dede, 1976). The connection is often made explicit in discussions of education using technology. "In a world where lifelong learning is made both possible and necessary by the quick pace of technological and social change, the convenience and effectiveness of this new mode of learning make it a major educational force for the twenty-first century (Harasim, 1996, p. 5).

Discussions of Web-based education are sometimes framed in terms of economic efficiency. Owston (1997), for example, used a framework that asked whether the Web made learning more accessible, promoted improved learning, and accomplished this while containing per unit costs. Dede said that “...by increasing the diversity of human resources available to students, distributed learning can enhance both equity and pluralism in preparation for competition in the world marketplace” (1996, p. 30). Collaborative learning is linked to future job skills. For example, teachers who learn to work collaboratively are thought to be more effective (Lindeman et al., 1995).

The so-called “convergence” is also linked to economic issues and may represent the commodification of classroom teaching, a process that has been identified as following from the commodification of university research over the past twenty years. Noble (1997) traces the current push towards online education to large companies such as Microsoft and Disney. In online education he sees the destruction of the traditional role of the faculty, the destruction of Canada’s public education system and its replacement with a sort of “just in time” training program for industry. In this interpretation distributed learning is seen not to serve learners and the broader society, but corporations.
Learner-media interaction

When William Gibson wrote *Neuromancer* and introduced the term "cyberspace," he reportedly based his visions of cowboy hackers jacked into the matrix on his observations of teen video gamers in Vancouver arcades. Whatever Gibson imagined, it's unlikely that he ever saw the matrix as the latest great hope of American universities. However as Gibson himself noted, "The street finds its own uses for things—uses the manufacturers never imagined." Cyberspace may not exist as real estate, but is very much contested terrain, and the contestants include universities, corporations and individuals.

Perhaps cyberspace is one of the informal public places where people can rebuild the aspects of community that were lost when the malt shop became a mall. Or perhaps cyberspace is precisely the wrong place to look for the rebirth of community, offering not a tool for conviviality but a life-denying simulacrum of real passion and true commitment to one another (Rheingold, 1993, p. 26).

This debate, and the many other questions that the idea of cyberspace raises, may seem far removed from issues surrounding computer use for distance education. However, when that education is "taking place" on the Web, the discussion is germane. Many courses require learners to venture beyond the confines of class material. In Web-based courses, interaction with media becomes interaction *through* media, and through a media that is more than simply a communications device. It is in itself a sort of location, but not only a "space." Some authors suggest that in entering it we become part of it.

Our love affair with computers, computer graphics and computer networks runs deeper than aesthetic fascination and deeper than the play of the senses. We are searching for a home for the mind and heart... Instead of a refreshing play with surfaces, as with toys or amusements, our affair with
information machines announces a symbiotic relationship and ultimately a mental marriage to technology (Heim, 1993, p. 85).

At home in the machine, we may be freer, because we are free to ignore or recreate the “body” that appears in cyberspace only as a description we generate. At the same time, our interactions with others may be narrowed.

**The embodied Websurfer**

Cyberspace places the body in spaces invented by the mind (Novak, 1991). We “go” on line and “go” to distant Web sites. We haven’t “gone” anywhere, but we aren’t simply at home in our living room, either. The computer screen becomes transparent: we enter. “This is what encourages the movement from text to image and then into cyberspace” (Burnett, 1996, p. 88).

When students are interacting with what they find on their computer screens they are sometimes interacting with text-on-a-screen—that is, with course content—and at other times with text produced by another learner or the instructor as part of a conversation. Yet the act of interaction seems the same -- the learner at the computer, responding to text. It is difficult to distinguish learner-medium from learner-content interaction. Cyberspace may be “defined more by the interactions within it than by the technology with which it is implemented,” but the interactions do take place within a framework of technology (Morningstar & Farmer, 1991, p. 274). Given this, it is worth looking at some of the issues that surround computer-mediated interaction in non-educational environments.

Some of the most interesting discussions come from MUDs, MOOs and other types of gaming software. For example, developers of Habitat, an early online environment, faced a philosophical debate around crime.

At the core of much of the debate was an unresolved philosophical question: Is an Avatar [character in Habitat] an extension of a human being
Thus entitled to be treated as you would treat a real person) or a Pac-Man-like critter destined to die a thousand deaths or something else entirely? (Morningstar & Farmer, 1991, p. 279)

These participants were involved in an online environment for fun, not for education, and yet this blurring between individual and on-screen representation in text will perhaps not be so very different. In online discussions and courses, the debate might be between those who critique text as ideas, and those who see their words as a representation of themselves. In both cases, the issue is related to embodiment.

“Our senses and our bodies don’t disappear because the television is on” (Burnett, 1995, p. 6). Neither do they disappear when we are surfing the Web. In her extensive discussion of the effect of computerization on industrial and office work, Zuboff (1988) argued that knowledge has normally been rooted in the body and the physical experience of the world. Transforming work from physical control of equipment to computer control, where the new work involved simply manipulating symbols rather than objects, created psychological discomfort for workers. Like other work, teaching and studying in the traditional face-to-face classroom have relied on the experience of the body, that is, the day-to-day sensory observations of classroom events. It is perhaps because distance education is perceived as disembodied that it has been viewed as of secondary value by educators. Yet the experiences we have had in our offline life become part of our experiences online, too, helping shape our reactions to what happens in this new space.

**Computer networks and the labouring body**

When clerical work became networked the effect was to convert the clerk from an active agent involved in a web of relationships to what Zuboff called a labouring body, alone with the computer and focused on the physical pain of repetitive work, not using the body in the service of interpersonal exchange. As the office has been the action context in
which clerical work has been embedded, the classroom is the action context in which

Zuboff found similarities between the pulp mill operators, account officers and

benefits analysts she studied, in that their work all involved action-centred skills. Like these

other workers, traditional teachers and students act on and with each other to create the

classroom based on their physical experience. Their knowledge, like that of the others, is “

embedded in practical action that is evanescent. … Action-centred skills thus are limited to

the time frame of events and the presence of actors in the context where those events can

occur” (Zuboff, 1988, p. 175). This suggests that the skills of teacher and learner cannot

simply transfer as-is to the online environment.

Some writers about cyberspace have rejoiced in the idea that it is disembodied

space. Computer networking has been described as a technology that “… has the potential
to not only change the economic structure of human societies but also overthrow the

sensorial and organic architecture of the human body, this by disembodying and

reformatting its sensorium in powerful, computer-generated, digitalized spaces” (Thomas,
1991, p. 32). Setting aside the issue of whether this is possible or desirable, the question

that remains for educators is what skills must be developed in this new environment.

Various authors have noted that “… interaction through networks helps break
down communication barriers and inhibitions that often stifle the open exchange of ideas in

traditional classrooms” (Eisenberg & Ely, cited in Harasim, 1995, p. 2). Computer

networks, it has been suggested, bracket the physical presence of participants, making us

more equal. “When online, we break free, like the monads, from bodily existence” (Heim,
1993, p. 99). This conclusion hints at considerably more complex discussions concerning

the relationship of the actual, embodied user of the computer network to their

onscreen/online persona.
Identity and representation

Issues of identity and representation are at the centre of many discussions of the online world. The self in this environment has been described as fluid, multiple, and defined by language (Turkle, 1995). The way these selves are constituted may be dependent not only on life on the screen, but offscreen, in their experience in the physical world of which they are a part. Discussions of the fluid and multiple self in cyberspace are contradictory. Those who have experimented with online interaction most intensely, those who use role-playing MUDs and MOOs as a primary space for social interaction, write of the exhilaration of playing with categories, not only of the pleasure of playing with categories that have seemed inescapable (taking a role of the opposite gender, for example) but of finding expression for aspects of the self that normally have remained hidden (Giese, 1998). Men write of discovering aspects of their character they define as more feminine. Women write of finding a more straightforward style of conversing while they are in virtual drag. Others tell stories of manipulation by cyber-cads, of misrepresentation, and of virtual rapes in cyberspace (Dibbell, 1993). Online conversationalists in listserves and other discussion forums write of the exhaustion and annoyance of flame wars and the ways in which conventions for civility are manipulated to stifle genuine debate (Shade, 1994). Women write of harassment and unwanted solicitations, of abandoning general listserves and discussion forums for all-women enclaves where what they are saying can be heard (Truong, 1993). Optimists ignore issues of access and write of a new, electronic Agora, a place where participatory democracy can become a reality. Pessimists insist that the computer has increased the power of large corporations, opening private matters to corporate observation and, ultimately, control (Postman, 1990; Robins & Webster, 1988). It would be naïve to assume that the online selves are unaffected by all these tendencies and
danger, and similarly naïve to assume issues that arise when CMC is used for general 
interaction do not arise in the context of education.

Some of the more hostile online acts can be seen as an attempt to stifle debate, and 
to reduce experiences of difference online. “It is, indeed, much easier to dismiss or 
eliminate on the pretext of difference (destroy the other in our minds, in our world) than to 
live fearlessly with and within difference(s)” (Trinh, 1989, p. 84). Such attempts are 
particularly serious in an educational setting.

One of the most frequently-discussed sites of difference online is gender. In her 
famous Cyborg Manifesto, Haraway maintains that at this moment, in the late twentieth 
century, we have all become cyborgs, creatures neither purely natural nor purely technical, 
but a new creature, “... a cybernetic organism, a hybrid of machine and organism, a 
creature of social reality as well as a creature of fiction” (Haraway, 1991, p 149). She 
suggests the cyborg, and the high-tech culture within which s/he is at home, challenges the 
dualism that has been systematic in western culture and philosophy, including the central 
dualism of self and other. For if organism and machine, nature and technology, cannot be 
positioned as opposites, how can anything else? One of the dualisms that the cyborg 
oversteps is the dualism of gender, the positioning of male/female as fixed opposites. The 
cyborg de-genders gender, replacing it with an assortment of effects based on positionality. 
Other writers argue that the social inequities faced by women follow them into cyberspace, 
beginning with access to equipment and continuing from there (Ferganchik-Neufang, 
1998; Benston, 1993).

Expectations for education and for interaction with colleagues, either online or face- 
to-face, may be gendered, although this is not to suggest that all men feel the same way, 
nor all women. The classic (and stereotypical) difference is suggested in two quotes from 
Mindweave (Morgan & Kaye, 1989), an early and well-known work on computer
networking in education. Here a male and a female student discuss the ways in which they found computer networking a useful adjunct to their distant learning experience.

Friends /sensed/ when I was feeling below par and their light-hearted comments boosted me when the workload was heavy. This support, I would imagine, would be very much part of a conventional university. (female student, p. x)

“...the feelings I had whilst using the system are just like those you get when playing an adventure game - time passes you by - what matters most is getting through the next challenge - putting over your point - getting agreement or disagreement but most of all interacting with fellow students in the ways that you would in a normal campus-based University.” (male student, p. xi)

Historically, male participants tended to outnumber females on Usenet, and on academic networks. Men usually outnumber women in electronic forums, where frequently a small percentage of participants do most of the talking (Kirshenblatt-Gimblett, 1996). Women have frequently reported harassment when they comment online, and may generally be less likely to participate in forums where flaming is likely to occur due to differences in conversational style (Shade, 1993; Truong, 1993). As Bryson and de Castell (1996) noted, what is often constructed as female computer anxiety may be a perfectly reasonable preference to avoid the harassment that women face when they enter male-dominated industries and spaces.

Recent media reports suggest that in North America at least female use of computer networks will soon equal or surpass that of males, but as yet there are no large-scale demographic studies of online students. European studies suggest that women are more likely to experience isolation in distance study as a problem, and are more likely to attend
face-to-face tutorials than are male students. They may value opportunities to interact more than their male counterparts do (Kirkup & von Prümmer, 1990). Women might therefore particularly value the opportunity for interaction provided in courses delivered on the Web.

Digitization of culture -- promise and problems

Educators are enthusiastic about the information and opportunities for discussion available on the Internet. Those who participate in such discussions are “knowledge networkers” in Harasim’s (1995) terminology, working collectively to transform information from a wide variety of sources into knowledge through interaction with others. From an enactivist perspective this is part of the promise of so-called networked learning. But most people do not have access to the Internet. When this is forgotten, educators adopt an uncritical view towards digitized materials. A review of an educational CD-Rom, for example, said “… the program Columbus allows students to relive the great navigator’s voyages and explore the New World as it looked when Columbus first saw it. The ability to control the learning experience makes the student an active rather than passive learner” (Halal & Leibowitz, 1994, p. 21). It seems from this description that the view involved is completely from the perspective of the invading Spaniards, rather than the original inhabitants. Yet “Columbus”, “1492” or any other concept can be seen from a multiplicity of perspectives.

Part of the strength of hypertext environments like the Web lies in the ability to provide access to many of these perspectives, but this process is not straightforward. On one hand, the Web’s ability to provide multiple information sources gives learners an opportunity for flexible interpretation, but on the other, without some organizing principle learners might simply scan information quickly, with no sense of coherence or meaning (Burbules & Callister, 1996). The very flexibility inherent in hypertext environments may end up simply privileging confusion (Murray, 1997). Various heuristic devices can provide
guides to the materials, "... but any set of heuristics will privilege particular structures of knowledge, and this exacerbates the stakes involved in deciding who will be selecting and organizing the information" (Burbules & Callister, 1996, p. 46-47). In face-to-face education it is usually the instructor who does this, and the process is observable. In Web-based courses, the selection and organization happens backstage, out of sight.

Even when the uneven quality of the information available is criticized, authors rarely suggest things may be missing. "The ability for anyone to publish almost anything on WWW is both a strength and a potential pitfall of the Web," one educator wrote (Shotsberger, 1996, p. 49). Comments like this help to perpetuate the idea that the Web will soon contain all of human knowledge.

Distance education via the Web is viewed optimistically, yet access is restricted to a small portion of the population. The information available online is similarly restricted to what is placed there by the technologically powerful. Educators are excited by the possibilities of distributed learning, yet few have discussed the increase in learner power and autonomy this new form would necessitate or addressed the possibility of restrictive surveillance of learners. All interaction on the Web is mediated by technology. Outside the literature of education, many discussions of the significance of this are taking place. Issues around access, gender, identity and embodiment all arise, and form part of the context in which Web-based education happens. In the distance education literature these issues are only beginning to be addressed.

Since this research investigated the structure of courses rather than the actual interaction occurring within them, learner-media interaction was not the focus of data collection. Learner-media interaction on the Web is a complex subject, and this chapter is by no means a complete consideration. It is intended only to provide background to this
study. Chapter 4 will discuss the study’s methodology, and examine some of the difficulties of interpreting a snapshot of a moving picture.
CHAPTER 4:

METHODOLOGY

The purposes of this study were to provide an inventory of types of interaction in use in courses offered on the World Wide Web, and to analyze the ways in which interaction was used. The purposes were met by surveying 105 Web-based courses. Potential avenues for interaction were recorded, and course assignments were examined.

There has been considerable discussion about the interactive potential of the World Wide Web and related technologies for distance education. There have also been numerous articles published concerning the advantages of including various specific interactive functions in Web-based courses. However, there has not been a systematic study of the types of interactive possibilities currently provided. Few course developers have the time or inclination to review the number of course sites that must be examined if a more-or-less comprehensive list of possibilities is to be developed.

As useful as an inventory might be, it would not provide a complete enough view of interaction in courses delivered via the World Wide Web. The availability of tools for interaction via computer-mediated communication has been hailed as an opportunity to provide more egalitarian, less isolating distance education opportunities. But providing tools is not the same as realizing the ideal. The way in which interaction is structured within distance education courses is crucial. It is possible to imagine a course which provides multiple opportunities for interaction and then uses all those opportunities as a chance for assessment and surveillance, a far from emancipatory view.

To provide a more complete view, it was necessary to step back from the specifics of tools and incidents and look for patterns of interaction, and the implications of these from the perspective of an adult educator. An examination of potential patterns for interaction was chosen in part because of the difficulty of measuring something called
"interaction." Learners could have been observed "conversing" by examining discussion content, of course, or reading screens of data, but while learner and text would be visible, the relationship between them would not (Burnett, 1995). It seemed more appropriate to look at the forms of courses and the kinds of interaction they seemed to enable, rather than attempting to examine interaction itself.

The structure of a distance education course has a strong influence on the kind of learning that can occur. "Course design and assessment in open and distance learning are the crucial areas for attention if we are to develop activities which will encourage learners to take a 'deep approach' to their learning and also encourage them to become more intrinsically oriented towards their learning (Morgan, 1994, p. 113). Potential communication channels in courses and the nature of the assignments given were examined in this study as a means of identifying the structure of the courses.

The structure of online courses reveals more than the topics to be covered. "[O]ur designs are not just objective descriptions of the instructional sequence, but rather they are also an implicit expression of our theory of learning" (Duffy & Jonassen, 1991). Those creating courses online or elsewhere must take care the course reflects their philosophy of knowledge and instruction.

This study was needed because there has been little critical examination of the ways the Web is used for education. Because there has been little systematic examination of interaction in Web-based courses, it was determined early in the study that a priority would be to view as many courses, in as many subjects, provided by as many different individuals and educational institutions, as possible. This broad-based examination would provide a background against which later, more in-depth research could be conducted. The decision to look at many examples helped to determine the research approach. It was
decided to conduct a survey of the interactive possibilities within courses, and to expand the results with an examination of the kinds of assignments required in each case.

There were, of course, other possible ways to study interaction in Web courses, each with advantages and disadvantages. An examination of a single course throughout the planning and delivery would provide a chance to study the course and its participants in context. Focusing on the instructors and designers of Web-based courses would have provided another approach closely linked to the context of the individual courses. Ultimately, though, an approach that focused on the structure of a broad range of courses, rather than on individual context, was selected.

My interest in structure grows out of my conviction that the organization of courses influences possibilities within them. When students and instructors begin their work together, the structure is part of their environment. The structure, indicative of the expected possibilities built into the course environment, can have an influence on how the educational experience develops, just as it does in face-to-face education (Davis & Sumara, 1997). Course structure emerges from context, but it is an influencing factor itself, not simply a result. The circumstances shape the design, but it is equally true that design shapes circumstances.

The lack of examination of the context means that there are questions, especially about the intentions of the educators, that cannot be answered by this study. Some of the unanswerable questions concern the educational approach of those offering the courses, something which is only partially revealed by looking at the completed course. As an example, consider choice of software used to present the course. In Vancouver, B.C. there are two universities, each of which has developed software for Web presentation of courses (WEB-CT at UBC, and Virtual U at SFU). It is reasonable to assume instructors and designers will be encouraged to use the software that has been selected or developed by
their institution. Choice of software has an impact on course structure, but may not be within the instructor’s control. Within a college or university, the decision to put a course on the Web in the first place may originate with the instructor or elsewhere in the institution. All kinds of pressures, including financial ones, push institutions towards offering courses at a distance via the Internet. Web-based courses do not completely and simply reflect the considered approaches of their instructors.

An examination of the context surrounding the courses would consider who teaches and takes the courses, who designs them, who offers them, what the people involved think of what they are doing, what institutions are involved, and what pressures are on them and on the individuals within them. This kind of consideration would examine what lay behind the courses: why certain channels of communication were included and others not, and why the assignments were set up as they were. However, such a review would be a very different study, with different aims, and would be able to examine many fewer courses than the present one.

**Person-to-person computer-mediated communication**

The Internet provides considerable opportunity for person-to-person contact, much of it provided not by the browser software that allows individuals to access Web pages, but by various other kinds of add-on software. Communication can be one-to-one, one-to-many or many-to-many.

**One-to-one**

- Electronic mail: The most familiar aspect of computer-mediated-communication (CMC) predates the Web, but is also important to it. Most Web pages include an e-mail link to the page’s creator. E-mail also allows files to be transferred between individuals.
• Video conferencing: Using small video cameras made for this purpose, individuals can transmit their digitized image to others. Commercial software such as CU/SeeMe is used to make this sort of videophone possible.

**One-to-many**

• Listserves or mailing lists: Essentially a sort of one-to-many version of electronic mail. Individuals send mail to a central computer address, and it is then automatically distributed to those who have subscribed to the list.

• Threaded discussion software: Unlike listserves, threaded discussion software requires the participant to access a specific site to see the messages posted. Messages are grouped by topics, or “threads”. When someone responds to another person’s message, the two messages are linked so everyone can read the “conversation” in its original sequence. Hypernews is an example of this type of software. More complex conferencing software that allows ongoing modifications and advanced record-keeping is not often used in Web-based courses.

**Many-to-many**

• Chat software: Internet Relay Chat (IRC) and other software allows multiple participants to type on their own keyboard and have what they type appear on the screens of everyone connected to the chat channel.

• MUDs/MOOs: Multi-User Domains (MUDs) and Multi-user domains: Object Oriented (MOOs) are similar to chat channels in that communication is synchronous and can involve large numbers of people simultaneously. They include a text description of a physical space where the conversation is assumed to take place. Participants can create objects (which also exist as text descriptions) and build their own areas within the existing space. Several “virtual campuses” that exist on the World Wide Web use these systems.
Finding courses on the World Wide Web

Person-to-person interaction in courses with a face-to-face component is expected to take place face-to-face, not mediated by the computer. Including such courses in an inventory of interactive possibilities would tend to give a false impression. Accordingly only those courses taught entirely at a distance with no mandatory face-to-face component were included in this study.

It was not my intention to examine all courses available on the Web, nor to determine a representative sample of those courses. Indeed, since the only centralized registries of Web-based courses are purely voluntary, and the various search engines available are somewhat capricious, it is difficult to imagine how a representative sample could be drawn, or what it would represent. To further complicate matters, addresses change frequently, courses are taken offline and revised and servers shut down. Thus the field is a rapidly shifting one.

The 105 courses examined for this study were found in a variety of ways. An initial 31 were Web-based courses discovered as part of a research project conducted at UBC in the spring of 1997 (Boshier et al., 1997). Other courses were found via subject discussion groups and library-type sites on the World Wide Web, and by using various search engines. See Table 1 for a summary of significant sources for courses.

Completely password-protected courses were not included in the sample. Many courses had some areas that were password protected and thus inaccessible to the researcher. These courses were included only if assignments could be examined and enough of the material could be viewed to determine what channels of interaction were available.
<table>
<thead>
<tr>
<th>Source</th>
<th>Address</th>
<th>Number of cases from the source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found for earlier project</td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>Referred to in another course</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Teaching and learning on the World Wide Web</td>
<td><a href="http://www.mcli.dist.maricopa.edu/tl">http://www.mcli.dist.maricopa.edu/tl</a></td>
<td>9</td>
</tr>
<tr>
<td>World Lecture Hall</td>
<td><a href="http://microlib.cc.utexas.edu/world/lecture/">http://microlib.cc.utexas.edu/world/lecture/</a></td>
<td>9</td>
</tr>
<tr>
<td>Adult Distance Education Internet Surf Shack</td>
<td><a href="http://www.helix.net/~jmtaylor/edsurf.html">http://www.helix.net/~jmtaylor/edsurf.html</a></td>
<td>4</td>
</tr>
<tr>
<td>Other online course lists</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Yahoo</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Infoseek</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Other search engines</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

**Data Collection**

All courses were accessed via Netscape 3.0 from my home. Using only one Web browser would be a limitation of the study had the focus been on design or ease of use of the various features located within the sites. Since this study focused solely on the presence or absence of various components, and the uses to which they were put, the use of a single Web browser had no particular effect.

Characteristics of each course were recorded on a data collection form (see Appendix 1 for the form used). A form was completed for each page. The home page was
printed, as was information concerning the evaluation scheme, assignments and mark
distribution.

The data collection instrument contained three sections: identifying characteristics,
interactive possibilities and student assignment requirements. Types of interaction were
based on the distance education literature. Specific forms of interaction (such as listserves
and chat rooms) were identified by the author in the course of research for an earlier study
(Boshier et al., 1997).

The identifying information included the Web address, method used to find the
course, and the date it was examined. The title of the course, name of the sponsoring
institution, course level and subject were recorded. The instructor's name and e-mail
address were noted but instructors were not contacted.

Possibilities for person-to-person interaction and learner-content interaction were
examined. Person-to-person interaction included learner-instructor, learner-learner and
learner-other contact. Both one-to-one (e-mail to other learners and instructors), one-to-
many (listserves and conferencing spaces) and many-to-many (chat rooms, which included
MUDs and MOOs) were included. Offline interactive possibilities such as optional face-to-
face meetings and activities involving learners' own communities were also noted. For
each type of interaction I noted whether or not the instructor could observe it, if it was
linked to assessment, and if it was required or encouraged. If the interaction was necessary
to complete an activity it was deemed to be required. Required activities could be graded or
ungraded, but were integral to the completion of the course. The interaction was deemed
encouraged if it appeared to be optional, but the course notes or other features encouraged
the learners to undertake it. For example, if an instructor made a suggestion that learners
could e-mail each other to discuss upcoming essays, perhaps posting a list of e-mail
addresses, e-mail to other learners would be deemed encouraged. If an assignment expected learners to review drafts of each other's essays, then it was required.

The examination of learner-content interactive possibilities focused on links to other Web sites. When external links were present they were counted and the number recorded. It was noted whether or not the learner following the links could be observed, and whether visiting links was connected to assessment, required or encouraged. The examination of assignments followed a similar pattern. Group projects, community activities, multiple choice or closed-ended tests, essay tests and written assignments were recorded, and opportunities for learners to contribute to course materials noted. For each category of assignment it was determined if the learner could be observed while completing it, if it was linked to assessment, and if it was required or encouraged.

Most data was collected in two two-week periods in the summer of 1997. This was done in an attempt to provide a time-limited snapshot of ways in which interaction was being used. Additional data collection was done for approximately three weeks after this initial period. The researcher revisited a randomly-selected sample of ten sites in the two weeks after the initial coding periods, without referring to the initial coding, to check the accuracy of initial coding.

**Uses of interaction**

The focus of the study was not only on the types of interaction available, but the overall purpose for which the interaction appeared to be used. Possible models for the effect of increased interactivity were initially developed, representing increasing interactive possibilities.
As Table 2 illustrates, increased interactivity was assumed to have the potential to decentre the instructor/institution and place learners, instructors and others on a more equal footing, more closely approximating the ideals of emancipatory adult education and the process of learning from an enactivist perspective. Courses most conforming to adult education principles and consistent with an enactivist view of learning would be found on the right side of this continuum, featuring many channels of communication, no panoptic observation, an egalitarian view of learner and instructor, and flexibility. By “flexibility,” I mean that learners can influence the content and the focus of the course can change in response to learners. Learners in a flexible course could influence its direction, choose content to be studied and negotiate their assignments and evaluation with the instructor. This initial approach to course structure suggested that it was increasing interaction with a variety of people that was the most central, and easily measured, variable. Accordingly, five discrete categories were developed, allowing for progressively more possibility for interaction. Table 3 illustrates the patterns of interaction permitted in each category.
Table 3 Interactivity and course structures

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online tutorial</td>
<td>no potential for interpersonal interaction.</td>
</tr>
<tr>
<td>Learner-learner, self-contained</td>
<td>Learner-learner interaction added.</td>
</tr>
<tr>
<td>Web connected</td>
<td>Learner-content interaction at external Web sites possible.</td>
</tr>
<tr>
<td>Connected to Web and community</td>
<td>Learner interaction with people offline added.</td>
</tr>
<tr>
<td>Traditional distance education</td>
<td>learner-instructor interaction possible.</td>
</tr>
</tbody>
</table>

Diagram:

- ![Diagram of interactivity and course structures](image-url)
Data analysis

In the first stage of analysis, frequencies were generated for each of the variables from the data collection sheets. The results of these frequency tables are discussed in Chapter 5. They provide an inventory of interactive possibilities in use on the Web and meet the first objective of this thesis. In the second phase, patterns of possible interaction were examined and courses grouped according to the interactive patterns they displayed. Case numbers were attached to each group and the sample assignments for each type of course were examined. The intention was to determine if there was congruence between the types of assignments that were included and the channels for communication that existed in the course. It is not the intention of this study to suggest that these are the only possible ways to group courses, nor that there are not huge differences between the courses in each category. Chapter 6 discusses the findings from this stage of analysis, thus meeting the second objective of this study.
CHAPTER 5:

INVENTORY OF INTERACTIVE POSSIBILITIES

This chapter will describe the 105 courses examined. The “demographics” of the sample will first be reported. The varieties of interaction allowed will be examined, and examples provided of ways in which interaction was used. The extent to which external links are used within the courses will be discussed. Finally, various forms of assessment included in the courses will be outlined.

When I selected courses for the sample, part of my aim was to include the greatest possible variety. No attempt was made to ensure that the sample represented the proportions of course providers on the Web. It should not be assumed that universities offer half of all courses on the Web, for example, although that is the case in this sample. To ensure variety, only one course was surveyed in cases where instructors offered several. It was assumed that the instructor’s approach to evaluation and view on appropriate interaction would not change greatly between courses.

Course demographics

Of the 105 courses examined, 48 (46%) were offered by universities. Of these, ten were graduate level courses, and five could be taken for graduate or undergraduate credit. The rest were intended for undergraduates. Thirteen courses (12%) were college-level, 38 (36%) were non-credit, and three awarded continuing professional education credit. Three courses could not be classified.

A wide range of subjects were offered (see Table 4). The leading category (humanities) includes seven language courses (in Swedish, French, Chinese and Japanese, among others.) Many of the computer courses focused on the use and content of the World Wide Web and the Internet. Specifically, seven were on the World Wide Web and Internet use, and four were on aspects of Web development. An additional four courses from the
education category were about Internet use for educators at various levels. Altogether, a total of 15 courses (14%) dealt with Internet use or Web page development.

Table 4 Subject area of Web-based courses included in this study

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and professional</td>
<td>14</td>
</tr>
<tr>
<td>Communications</td>
<td>6</td>
</tr>
<tr>
<td>Computer</td>
<td>15</td>
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<tr>
<td>Education</td>
<td>13</td>
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<tr>
<td>Fine arts</td>
<td>9</td>
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<tr>
<td>Humanities</td>
<td>22</td>
</tr>
<tr>
<td>Social sciences</td>
<td>12</td>
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<tr>
<td>Science</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
</tr>
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</table>

Two-thirds of the courses (68%) originated in the United States. There were 18 Canadian courses (18%) and six from Australia. Courses were also found in Europe, New Zealand and the United Kingdom. This distribution was no doubt affected by my decision to examine only courses offered in English. It required effort to find courses originating outside the United States. This may reflect the preponderance of computers connected to the net that are located in the United States (1996, Nature of Cyberspace). It may also reflect the American ownership of most of the common search engines (Boshier, Wilson, & Qayyum 1997).

Universities offered half of the courses examined (see Table 5). In total 71% of the courses were offered by formal institutions of higher education. In some cases,
departments of continuing studies or their equivalent were responsible for them. These departments are a traditional location for adult education. However in most cases courses were at the graduate or undergraduate level, potentially part of a degree program. Very few of what Schroeder (1970) would categorize as Type III institutions of adult education, that is, organizations for whom adult education is an allied activity, were found to offer courses. Such organizations might be less likely to show up in compilations of sites offering distance education, or be less adept at promoting their educational offerings on the World Wide Web. They might focus their educational efforts on their membership or the local community, and therefore not concentrate on any form of distance education. It is, however, worth noting that if the reported convergence developing between distance education and traditional face-to-face education is to become a feature of adult education some traditional providers may not participate.

Table 5.2 Institutional sponsorship of courses

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Frequency</th>
<th>Percent</th>
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<tbody>
<tr>
<td>University</td>
<td>53</td>
<td>50</td>
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<tr>
<td>Private college</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Public college</td>
<td>15</td>
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<td>Business</td>
<td>9</td>
<td>9</td>
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<tr>
<td>Individual</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Community group</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Government</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2</td>
<td>2</td>
</tr>
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</table>
Interestingly, twelve of the courses (11%) were offered by individuals with no identifiable institutional affiliation. Some of these individuals seemed to be enthusiastic hobbyists, sharing what they knew with others. For instance, a songwriting course was offered by a Dutch musician. (Case 057). A hit counter at this site gives an indication of the popularity of this idea. The meter showed over 10,000 hits for the site between 1996 and August, 1997.

In all but two courses, the instructor was clearly identified. Most of the instructors (65, or 68%) were men. There were 26 female instructors (27%). Three courses were taught by a team of men and women. This may reflect the gender imbalance that has been common on the Internet itself.

Potential for interpersonal interaction

Almost all courses examined used the computer to provide channels for interpersonal communication.

Learner-instructor interaction

Given the importance usually assigned to student contact with instructors, it is not surprising that e-mail to the instructor was the most frequently-provided forum for interaction. One hundred of the 105 courses (95%) provided this. In almost half of these 100 courses (47%), electronic mail to the instructor was encouraged. A further 24% required that e-mail to the instructor be used as part of the class.

In some cases the instructor’s name was linked to e-mail, and except for the hyperlink, no other mention of this form of communication was made. Often introductions to courses included a statement such as:

... if at any time during the course you are having problems understanding instructions please do not hesitate to contact the instructor at __@_____.
(Case 102. See Appendix II for the complete list of cases with Web site addresses current at the time they were accessed).
Others made an effort to make themselves more approachable by adopting an informal style. One instructor introduced a brief biography by saying:

Greetings! I am excited to be working with all of you! This is an educational experiment, one which I hope will be successful. The online medium can be cold and impersonal -- it can also allow for a greater sense of immediacy and scholarly intimacy (045).

Several instructors acknowledged what they saw as the challenges of an online environment for communication. Some encouraged multiple avenues of contact, perhaps indicating a recognition or expectation that electronic mail might not always seem most appropriate.

Throughout the course, I encourage you to talk with me any time you have a question, idea, problem, or concern. I should normally be able to respond to e-mail within 24 hours, often sooner. Phone calls are welcome; I'm not always in my office, but I have voice mail, so you can leave a message and I'll return your call. Finally, if you're in or near Bloomington, a 'live' meeting is always a good idea (079).

This anticipated lack of comfort seemingly extended to some instructors, who did not themselves seem to entirely trust the medium.

Please telephone your instructor with your E-Mail Address: ###-###-####
(voice mail) (044).

Some courses used e-mail to instructors for specific purposes. One instructor suggested that learners contact the instructor if they had difficulty finding a group to work with on projects (043). Another required learners to submit a weekly progress report, reporting on that they had read (001). Another used e-mail to the instructor to help learners define their objectives for the course.

What you contribute in this assignment will help define the emphasis we give our investigation of digital technology and its impact on society (003).

Learner-learner interaction: e-mail to other learners

Almost half of the courses (52, or 59.5%) made learner-to-learner e-mail possible.

In some cases this meant providing a list of e-mail addresses. In others it simply meant
that learners’ addresses were displayed within asynchronous conference environments, and so were available to learners who chose to look for them.

Electronic mail to other learners was assessed in only two cases, and required in just six. In 23 cases it was encouraged, but usually in a rather vague way, as an option for discussing the subject being studied. (E-mail to other learners was defined as “encouraged” if a clickable list was provided, or if the text suggested it and a list of addresses was provided.) Occasionally learner-to-learner e-mail was used for one-to-one commentary on drafts of assignments (014). It was sometimes recommended as a means for communicating during group projects (058). In general, though, when e-mail between individuals was provided, instructors seemed to simply provide the technology and leave it up to the learners to decide how, or if, it would be used.

Some instructors discouraged individual learner-learner e-mail, and preferred conversations that occurred in an environment where they could be viewed by everyone.

If the matter concerns the current discussion topic, then you should post to the list. That’s where most of your messages should go. There are times, though, when you will want to talk directly to me (or to another class member). To do this, send mail to the individual, rather than to the list (036).

**Asynchronous discussion: learner-instructor and learner-learner interaction**

Various asynchronous communication methods were provided. Forty courses (38%) provided threaded, asynchronous discussion spaces located on their Web sites. Twenty-three (22%) provided for asynchronous discussion with a listserv. There are two chief differences between these two methods. A listserv produces e-mail that goes directly to each participant, while a threaded discussion space remains on a distant server and must be sought out by the learner. Secondly, a listserv provides messages in the order in which they are received, but does not do any other grouping. A threaded discussion space groups comments by topic, and by order of response, making it easier to follow conversations.
Some of the most creative and educationally significant uses of computer communication technology occurred in this area. For instance, in one online writing class (025) and in an advanced composition class, the focus of the classes was on asynchronous discussion.

We use interactive feedback as our main tool for improving writing. This course is a ‘workshop’ that depends on your participation, your constructive comments, and your willingness to accept comments and to try alternatives (016).

A non-credit eco-psychology course encouraged learners to communicate via a listserve that included former as well as present students. The course also provided newcomers the option of a newcomers-only list, but noted, “If you post to the natureconnect list, experienced people on the list will help guide you” (050). A class on world culture was also open to the participation of people not formally registered.

If you are not taking the course, feel free to look at our schedule and our readings and join in our discussions and our ‘discussion quizzes’ with your ideas and knowledge (072).

This level of openness is unusual and raises questions about learners’ rights to privacy in “in-class” discussions. Some instructors provided for private discussions while maintaining open access by password-protecting sites’ discussion areas and lists of participants, but leaving online lectures, lists of links and other materials freely available to all Web users.

A course on the Internet for educators included a collective “help” desk as one aspect of the conferencing for the course. Learners struggling with HTML or search engines could post a question and have it answered by one of their student colleagues (076). The instructor required participation, but this could be either as a questioner or as a guide, a creative way to deal with multiple levels of experience within a class. A non-credit HTML course similarly recognized learners with different expertise.
Many of our assistants are former class members helping out as ‘guides’ in a formal manner this semester but if knowledgeable current students care to assist, you are welcome to pitch in and we thank you (064).

In a social work class, former students co-facilitated discussion groups (020).

Instructor motives for their emphasis on asynchronous conferencing varied. One baldly stated, “This is the future; network literacy is the key to getting a job” (049). A technical writing instructor suggested that since electronic communication was used extensively in the field, students should use the tools as part of their professional preparation (043). Some had less specific objectives. One English literature instructor wrote,

Since we have no ‘classroom,’ the most effective way I can think of to understand and assimilate the literature is through lots of e-mail and news discussion (004).

Asynchronous discussion at times appeared to be a dead end, or at least not fully utilized. For example, a media studies class used its asynchronous space to post short student assignments but did not encourage follow-up, revisions, or private learner-learner discussions based on the assignments (003).

Some courses required minimum amounts of participation in asynchronous discussion, sometimes setting a target of so many messages per week, or per topic.

You might be able to nod off in a corporeal classroom, but in a cyberclassroom, you must be an active participant (020), a social work class noted. This course required at least two comments per week from each learner, one a new contribution and one a response to another learner’s comments.

Several instructors included a discussion of what was and was not seen as appropriate for an online discussion. One unusually clear example, from a history course, stated:

Discussion lists have their own idiom, located somewhere between formal discourse and casual conversation. Strive in your message for two worthy goals: clarity and precision (036).
A non-credit course aimed at helping would-be artists explore their own creativity, noted that the nature of appropriate comments could change over time.

[T]he ... group loosens up as we move along the pathway, and something greater than the individual workings evolve in a group dynamic (088).

Synchronous discussion: learner-learner and learner-instructor interaction

Synchronous online discussion existed in only 14 (13%) of the courses studied.

For the purposes of this study, synchronous online discussion included Internet Relay Chat (IRC) and its variations, as well as MUDs and MOOs.

Those courses where synchronous discussion plays a part have limitations not present in courses without it. For example, a course in rhetoric used a MOO extensively for online discussion, which was scheduled to take place from 11:00 a.m. to 1:00 p.m. North American Central Standard Time (015). If an entire class is to participate in synchronous discussion it must occur at a pre-set time. However the addition of this feature greatly reduces the scheduling flexibility that may be one reason for learners’ decision to take courses at a distance. This limitation was particularly apparent in a college writing course conducted entirely on a MOO, and requiring strict punctuality and attendance lest marks be deducted (026).

In all cases, learners’ activities in synchronous discussion spaces could be observed at any time by the instructor. In all but one course it was assumed the instructor would always be present when learners were meeting in a synchronous space. The exception was a technical writing class which explicitly made the technological tools of the course available to learners on their own. In this case the instructor suggested the use of synchronous discussion space to plan group assignments.

Send e-mail letters of personal introduction and invitation to individuals you have selected as potential partners. ... Be prepared to continue conversations with these people via e-mail or at WebChat where several of you can
convene at once. In order to do this you will need to arrange a mutually convenient time (043).

Interaction off line

Fourteen of the courses (13%) encouraged or required learners to participate in (or develop) offline activities in their own communities as part of the course. Some instructors explicitly developed these activities to compensate for the lack of face-to-face interaction. For instance, an instructor in a course on computer-mediated communication in organizations wrote:

Since we will not meet face-to-face, I have designed a variety of assignments that will help you to engage in a variety of “out-of-class” exercises to try to substitute for the dynamic in-class interaction that usually occurs (especially in my class!) You will have to seek out other people to discuss ideas... (067)

An instructor in a social work class suggested that the topic of the course (grief) made offline discussion important

Your own experiences are very relevant to your understanding of these material and you may wish to discuss the course information with your family and friends. This will not only broaden your information base, it will also help you to consider and re-consider your thoughts on these ideas. If you choose, you may share the results of these discussions with your fellow class members (020).

A course discussing human factors in computing required learners to teach someone to use a program and report on the experience (041). This would be a relevant and useful assignment whether such a course was taught on the Web or face-to-face.

Learner-content interaction: links to external sites

One of the strengths of the World Wide Web is the ease with which sites can be linked. In an online course, this means supplementary materials can easily be provided, and sites conveying different views of the same issue made accessible for students.

Only 65 of the 105 courses examined (62%) included links to external sites. In most cases these links were used to provide supplementary information for learners. Only
17 of the 65 courses including links (26%) required learners to use them, while 11 (17%) assessed learner activities involving links. Some of the required assignments were superficial:

Who do you think is the most important of these psychologists based on what you find on the Web? (013)

Requiring such an assignment does not suggest a great deal of planning on the instructor's part, but rather an assignment that simply uses the Web somehow. Although more than half of the courses with links encouraged their use (37, or 57%), in nine cases (14%) the links were simply present, and learners were not directed to look at them.

The number of links offered ranged from one to 259, with a median of 21 and an average number of links of 44.

Assignments

Although there has been considerable discussion in the literature that suggests the introduction of computer-mediated communication in distance education itself represents a paradigm shift, increasing the focus on student collaboration, this is not apparent in the assignments chosen by instructors in the courses I examined. Rather there seemed to be a fairly traditional mixture of individual written assignments, quizzes and examinations.

Group projects

Group projects were part of 14 (13%) of the courses. These projects were required in eleven cases, and formed part of the assessment. For instance, a course on America in the sixties required learners to build a team Website.

Each finished site must have a single, well researched, footnoted paper that discusses and documents your findings. The rest of the site is up to you and your teammates. The paper can be linked in various ways but it can be largely invisible unless the site visitor is interested in reading more or seeks documentation (087).

In other cases, the class worked together to produce a final project.
Instead of individual essays, you will be collaboratively producing written assignments that will evolve into a major writing project, the travel journal, at the end of the semester (020).

Few of the instructors explained the purpose of group projects or collaboration, and surprisingly few of the courses used them at all. Attempts to have learners edit or respond to each other’s written assignments were more common than group projects were. For example, a political science class required learners to swap outlines and reference lists and discuss them prior to beginning a major term paper (105).

**Community-based assignments**

Six of the 105 courses offered students an opportunity to do an assignment within their local community, and three of these courses required and assessed the projects. Some of the community activities were simple, requiring learners to discuss ethical issues with colleagues in a course on ethics for nursing, for instance (045). Education courses directed at working teachers sometimes asked learners to develop a curriculum unit, teach it to their class, and evaluate the outcomes (034, 033). The most complex activity was in a non-credit course on the work of W.E. DuBois. This course required learners to organize an activity focusing on DuBois’s book, *The Souls of Black Folks*, in their own communities (045).

**Multiple-choice tests**

Multiple-choice or short answer exams were used in 27 (26%) of the courses. Results from these formed part of the assessment in 17 cases (63% of those including this type of assessment). In others the quiz or exam was used as a tool for self-assessment. In some cases correct responses were provided immediately (electronically) when students submitted their answers. A management accounting course took this approach to online, chapter quizzes (098). Ironically some of these courses were the ones that most frequently used the word “interactive,” although what they included was very much ‘point and poke’ interactivity. One striking example of this was in “An interactive Web-based basic short
course in the applied ethics of honesty and lying,” offered for continuing professional education credit in the United States. The course posed hypothetical situations and asked learners to choose one of three possible responses. Once the choice was made one of two responses would appear on the screen, either:

“This most likely is dishonest. Your values need further examination. It looks like there is an element of deception there. Would you want others to do this to you? (Yes, No) Could you do this openly for all to see? (Yes, No)

or

This is HONEST. Because it meets the standards of honesty:
• Based on “doing to others as you want them to do to you.”
• Matching of reality, thought and action.
Openness without cover-ups. (095)

Another course offered short-answer questions, listing correct answers with the comment, "Congratulations if your response contained one of these!” (009)

Essay examinations

Fourteen of the courses included some kind of an essay examination as part of the range of assignments available. All but one of these courses required the examination, and used it as a tool for student assessment. In most cases samples of the exams were not provided. One history instructor did provide a sample completed exam, extensively annotated by the instructor to explain the rationale behind the marks assigned (036). Another exam question provided in advance by the instructor in an English literature course involved an examination of the correct order of stanzas in an unusually-laid-out poem (004). In this case the questions were available to learners throughout the term.

Written assignments were by far the most common type. In 63 cases (60%) they were included, and in 56 of those they were required. “Written assignment” for the purposes of this study means the production of a piece of formal writing, and does not
include such requirements as posting comments to an e-mail list. In 51 of the courses including written assignments (81%) they were part of the means of assessment.

Some of the written assignments were linked to the work world of the subject. A technical writing course required students to work in groups to develop a computer software manual (043). A screenwriting course required students to meet tight deadlines and defend concepts and ideas "... to a producer (a role played by the instructor)" (010).

Other instructors focused on the link between their subject and the students experience. An example from a political science course stated:

The best essays or projects are those that take ideas from books or other sources and compare them to the experiences of the individual writer in the real world. What is the use of having a body of knowledge whose theoretical framework, when contrasted to the reality to which it is supposed to apply, cannot stand the light of day? (102)

Some instructors were less innovative. A course on problem solving in computer programming, for instance, had the same written assignment for each chapter... with varying chapter numbers. "Read Chapter 2 in your textbook, and do the questions at the end of the chapter in your text," each chapter said (097).

Some instructors allowed for revision of final projects. An Internet for educators course required students to assemble all term assignments into a portfolio that they mounted on a Web site. The instructor requested students to submit the URL for the site 2-3 weeks before the deadline: "This will allow time for ... corrective feedback that can be applied to the final assignment," he wrote (076).

Other instructors used written assignments to suggest directions for future course work. A media analysis course asked students to develop a "fat question" based on readings and experiences, and noted that "... this question or one created by your colleagues might serve as the basis for your long paper" (028). Another media studies course asked students to write a one-page description of their hopes for the course as their
first written assignment, and suggested that this would influence the direction of the course (004).

Written assignments frequently were used to provide an opportunity for student reflection. An audience evaluation course, for example, asked learners to:

"... develop a response to a subset of this material. Address how the information relates to your work as a professional communicator" (015).

Some instructors were careful to spell out criteria for marking. One course provided a chart indicating the level of accomplishment in each of three areas (content, reflection and writing) and the mark that would result from each level (014).

Some innovative approaches to marking were used. One writing instructor did not grade individual assignments, but rather gave an overall mark for a set of lessons. "This is meant to encourage experimentation, and to shift the 'worth' of a piece of writing away from an associated grade to its perceived effect on readers," the instructor wrote (016).

Some written assignments were extremely dull. A linguistic course required learners to submit a report each week answering three questions:

- The topic we were discussing last week was:
- What I remember most, or found most interesting about this topic was:
- What I didn’t understand very well was: (001)

Some instructors, while they suggested a written assignment, were open to other ideas. An English literature instructor wrote:

... because the course is delivered entirely online, these are probably all writing assignments. However, with a bit of creativity and motivation, you could conceivably make a video (a scene from a Shakespeare play, for example) or even a hypertext presentation (Milton?) for your final project (004).

**Contribution to course materials**

In 18 cases (17%) students were encouraged or required to make some kind of contribution to class materials. This contribution was required and assessed in eight of the courses. The contribution required was usually superficial and would have little effect on
the direction of the course. Most simply involved creating a Web site to be linked to the class site (024), adding a book to a supplementary reading list (099) or writing a report that might be added to the class Web site (036).

Various courses provided other, often quite innovative, assignments. A course on using Netscape featured a “scavenger hunt” for information as the assignment for the section on search engines (103). A course on communication and society required learners to observe non-verbal behaviour in public places, and write a report contrasting any gender differences they may have observed (066). A non-credit eco-psychology course required learners to perform an activity in nature, and reflect on their feelings as they did so (050).

If distance education is undergoing a paradigm shift, moving towards a more learner centred approach that focuses on the experiences learners bring to class, then I would expect to see evidence of this shift particularly strongly in the area of assignments. In particular I would expect to see a greater emphasis on learners’ contributions to the course material. The rarity of this kind of assignment indicates a contradiction that might tend to prevent such a shift from occurring. On one hand, distance educators suggest that, using new technologies, they are able to shift the central focus of the course from instructor to learner. On the other hand, courses are almost always designed completely in advance and directed towards a pre-set means of assessment. There can be few deviations from the anticipated path, and hence few opportunities for genuine learner contribution in a way that affects the course for the instructor and for other learners. Thus although the courses provide opportunities for communication, their level of interactivity, particularly between learner and instructor, is low.

The preponderance of written assignments as a means of assessment might reflect instructors’ desire to allow learners maximum freedom within the constraints of a pre-set course. Some of the instructors specifically indicated their willingness to have students
design their own assignments to match their interests. However this does not represent a paradigm shift. This approach is commonly followed in both face-to-face and traditional distance education courses.

Instructor work load

This study focused on the structure of classes and their potential for interaction, and only incidentally on the role of the instructor. However it was striking to notice the workload that many of the courses would require, and the various attempts that instructors had made to deal with the workload level. An instructor in a composition class, for instance, limited the number of pages students could submit.

Total number of pages written for these papers is a minimum of 31 and a maximum of 51 (sorry... in the interest of my own work load I can't look at more than the maximum) (016)

Other instructors seemed unworried by workload, or by the expectations they might raise in their students. One wrote, "While I am at the office, my e-mail is checked every 15 minutes" (001).

The volume of reading required for both instructors and learners in some courses is nothing short of incredible. For instance, a course in linguistics required a weekly report from each learner, as well as participation in asynchronous discussion (which the instructor would be required to read) and longer written assignments (001). A media analysis course required students to evaluate five Web sites, which the instructor also vowed to look at as part of the grading process, no small feat if there were many students in the class (028). This was one of several assignments in this example. Many of the courses required extensive written assignments as well as participation in asynchronous and/or synchronous discussion. Some courses warned learners that they must expect to spend more time on a course taught online than on a face-to-face course (020). The same proviso would seem to apply to instructors.
Adult education

Some courses clearly were designed for adult learners, and made reference to learners’ work experiences and the contribution they would make to the course. These courses often allowed for student-selected completion times and provided clear instructions for obtaining extensions if required. Others illustrated a much more rigid attitude, none more so than this college writing class:

...absenteeism is not condoned. You will be given one (1) free absence. After that I will deduct one letter grade at the end of the semester for each day you are absent. I do not take excuses because I do not choose to play judge or jury as to whose excuse is valid and whose excuse is not valid; therefore there are NO excused absences. Again, you are allowed one free absence for whatever reason you choose. If you choose to take a particular day and sleep in, go shopping, visit a friend, fly home for a wedding, or just blow off class, that is fine; but if later in the semester you are ill, have a death in the family, or need to catch a flight, you will have already used up your absence (026).

Some courses allowed learners to progress at their own pace. Others adhered to a more traditional academic schedule. This difference had an effect on the approach to participation in asynchronous discussions. For example, a management course based on a standard academic term stressed the importance of deadlines, “... in order for the class to move forward as a group, sharing in the same conversation” (032). In another course, on computer-mediated communication in organizations, learners could begin and finish the course at their own pace. In this instance comments posted to the asynchronous discussion area sometimes received a response much later, from someone months or weeks ‘behind’ the original poster in their progress through the course (067).

From an adult education perspective, some of those offering courses appeared to have a strange view of the nature of the adult learner.

Unfortunately, we carry our own ‘baggage’ from previous relationships as well as our communication limitations with us into any class (020).
This view of life experience as unfortunate baggage contrasts with the approach, more familiar to adult educators, from a course focused on America in the sixties:

As adults and professionals, I think each of you bring a great deal to this conversation. Since most of you are directly involved in business or professional pursuits I assume that you, like I, have to work in a team environment. I want to call on those skills and in doing so emphasize the collaborative nature of learning (087).

Some courses tended to be more welcoming to adults, who are frequently critical and demanding students, than others. A course on the Internet for educators not only provided objectives, but also explained why the instructor felt each objective was important (076). Another site included a virtual tour for visitors to the site, or potential students (043). Some courses allowed learners to choose the modules they would complete (014).

Others seemed less aimed at adult students. Some were excessively concerned with timing of assignments, and included bold-face descriptions of the marks that would be deducted if an assignment was late (023). Others used simplistic educational approaches that many adults would find insulting. For instance, an economics course provided a reading guide that asked very basic questions, and assured learners, “The answers are usually a very few words, and are found in the text” (104) a particularly condescending variation on hunt-the-slipper. Some slips were more well-meaning, but no less potentially irritating to the adult learner. For instance, one course suggested that fellow students would lack the life experience to evaluate their fellow learners (041). Another included a “contract” between learner and instructor that provided no room for negotiation and seemed to suggest that learners were very young (072).

Panoptic observation

Very few of the courses encouraging or requiring learner-learner interaction provided any opportunity (aside from learner-learner e-mail) for discussions to occur without instructor observation. Synchronous discussion was always observable.
Asynchronous discussion was observable in all but three cases. The process of completing assignments was not generally observable. Nor was e-mail to other learners. Thus although there are clearly issues of concern here it was not possible to position courses on a continuum from “panoptic” to free of this kind of constant observation.

Glitches

Some of the glitches in courses were simply technical mistakes. For example, an economics course adopted a very plain design, because:

Our preliminary information suggested that many people who want to take the course just don’t have the equipment necessary to run a heavily loaded Web environment with their existing technology (006).

Yet the same site used frames to display all course notes, an HTML feature that requires more memory than simply text display and is not accessible to text-only browsers.

Some of the glitches were in tone, rather than in technical matters. I completed one online quiz, for instance, and was told:

“mewilson, you have scored 5 out of 8 in this test. You didn’t do too badly.”

The mix of informal good cheer and my user name was jarring.

Other glitches suggested that instructors were not accustomed to preparing courses for the global class they could face on the Web. “As citizens of the United States we rely a great deal on organizations…” (058) one instructor wrote. Other problems were caused by moving from format to format without careful proofing. “Check the pages in the pocket of this study guide,” one course said (015).
CHAPTER 6:

PATTERNS OF INTERACTION

Learner-content, learner-technology and learner-environment interactions all provide rich fields for further research, but the opportunity for interpersonal communication is most frequently identified as the advantage of the introduction of computers into distance education. The lack of opportunity for person-to-person contact has caused adult educators to view distance education as second-best. Principles of adult education are based on person-to-person communication. Whether that takes the form of friends educating friends (Lindeman), adults participating fully in planning their educational experiences (Knowles) or a facilitator challenging and helping individuals come together and recognize the reality of their situation (Freire), the relationship between people is viewed as crucial. Finally, enactivist ideas about learning suggest that it takes place within the context of interaction, particularly interaction between people. For all these reasons, learner-instructor and learner-learner interaction were the focus of this study.

The presence or absence of interaction between people, the extent to which it was encouraged, and its significance to the overall design of the course was used as the means of differentiating between courses. Using potential interaction as the criteria, the 105 courses were grouped into distinct groups: online tutorials, traditional distance education, self-contained courses with learner-learner interaction, courses linked to the Web and with learner-learner combination, courses linked to learners' communities with learner-learner interaction, and courses linked to both learners' communities and the Web.

It was not my intention to simply examine the characteristics of courses in each category. Rather I was interested in examining the idea that adding channels for communication to distance education courses represented a shift in the structure of those courses, such that they could be said to represent a "new paradigm" in distance education.
Based on my examination of these courses, I would argue that this is not the case. If an instructor is determined to remain firmly in control of the course, serving as the sole source of authority on the subject at hand, that instructor can do so, no matter what channels are opened for communication. On the other hand, and at the other extreme, an instructor who is committed to honouring the experience that learners bring to classes (whether face-to-face or at a distance) and open to new ways of approaching their own experience, can create a distance education course that reflects these commitments, whether the course is delivered via computer network or postal system.

Definitions

- Tutorials: No learner-learner communication is built in. Learner-instructor communication is not present.
- Traditional distance education: No learner-learner communication. Instructor-learner communication is present.
- Self-contained: Learner-learner communication and learner-instructor communication are built in. No external links are provided. There are no activities involving learners’ local communities.
- Learner-learner with links: Learner-learner communication and learner-instructor communication are built in. Links to external Web pages are provided. There are no activities involving the learners’ local community.
- Learner-learner with links on and off line: Learner-learner communication and learner-instructor communication are built in. Links to external Web pages are provided. There are activities involving the learner’s local community.
- Learner-learner with community links only: Learner-learner communication and learner-instructor communication are built in. There are activities involving the learner’s local community. No links to external Web pages are provided.
Online tutorials

Online tutorials are a form of self-study. In this model for Web courses, no possibility of contact with other learners is provided, nor is it possible to communicate with the instructor (Figure 4). Activities may be suggested, but there are no assignments evaluated by an instructor. There may be multiple-choice tests or questions "graded" by a script built into the Web site, providing the learner with immediate but limited feedback, or learners may be encouraged to try recommended activities and see for themselves what the outcomes are.

![Diagram of online tutorial](image)

**Figure 4** Online tutorial

It could be argued that this is not a form of distance education, given the lack of interaction with other individuals. However, such courses are a legitimate type of self-study. They are advertised on the Web as courses, thus placing them within the realm of this study. As a form of education they are weak, since there is little opportunity for the learner to check their new understanding with others, or to have more experienced practitioners evaluate their application of what they have learned. This is not to say that they might not be useful and informative.

Three online tutorials, two of which focused on aspects of Internet use, were included in the study. (Many more were discovered but not included.) Two of the three
included assignments for learners, one a multiple choice quiz corrected immediately by a script, and the other an online “scavenger hunt” for information, with clues and answers provided. The two Internet courses provided links to search engines and related sites.

The Web contains many other sites, developed by many different groups, that are similar to these. Some have been created by hobbyists interested in sharing their interests, others by libraries as a means of introducing their clients to the Web (021). These courses are not “interactive” in any meaningful sense. They are similar to a how-to book, a form which is useful, but not distance education.

The three types of interaction that come into play in this type of course are learner-content, learner-medium and learner-environment. Usually the course designers make few assumptions about, or references to, learner-environment interaction.

**Traditional distance education**

The second model is familiar to anyone who has taken a print-based correspondence course. In this model learners have contact with the instructor, but not with each other (Figure 5). The courses usually involve learners submitting assignments to the instructor, who evaluates and returns them. This is the type of distance education that adult educators have tended to see as inferior, in that it does not include the possibility of learner-to-learner interaction.

![Figure 5 Traditional distance education](image-url)
This lack does not necessarily mean, however, that the learner in this situation is isolated from all other people. From an adult education perspective this has been a weakness in writing about distance education. There has been little recognition that adult learners are, by the nature of their lives, seldom isolated from others. Rather than characterizing learners as solitary, distance education would perhaps have been better to focus on the ways in which adult learners are connected with others, although isolated from the institution of distance education. Like their non-computer-based equivalents, traditional distance education courses on the World Wide Web focused little attention on learners' interactions in their communities. Only one of the 36 cases in this category required or encouraged learners to do assignments that involved their off-line communities.

In traditional distance education, learner-instructor interaction is central to education. Learner-environment interaction tends to be viewed somewhat negatively, or as a disadvantage. (This is in contrast to adult education where the life experience of learners is seen as a contribution and an advantage.) Like the online tutorial, this model is usually based on a fairly rigid idea of knowledge transfer. Content is typically pre-set. Students may be able to contribute their ideas, but cannot alter the course. This is especially true when exams are used to evaluate learning, since these are usually developed in advance.

Courses were defined as “traditional” if they allowed for learner-instructor communication, but no learner-learner communication. Within this category, when the course materials were examined in more detail, courses were found to be of two types. One group resembled the online tutorials discussed above, in that there were no assignments evaluated by the instructor. Contact between learner and instructor would in this case essentially amount to learners asking questions for clarification as they worked through the materials. In total, 21 of the 36 courses identified originally as traditional distance education fell into this category.
The remaining courses all required student assignments, destined to be evaluated by
the instructor. Thirteen of them included multiple choice tests, and thirteen written
assignments. Other assignment types included essay-type tests. In this model, the
instructor is positioned as the source of knowledge and the student as the seeker after it.
Knowledge itself is viewed as a substance that can be transferred. Although
communication between the instructor and the learner may be frequent, it is not designed to
be the "mutual influence" suggested by the definition of interaction.

A course in Canadian Economic History provides an example of traditional
distance education. The syllabus states:

In all probability, students will be instructed, through interaction on e-mail,
to read beyond the primary, required reading on the supplied list (105).

As noted, considerable emphasis is placed on the role of the instructor. Highly-structured,
weekly written assignments provided the main method for learner evaluation.
Representative questions for study give the flavour:

How was European economic development inconsistent with H.A. Innis's
theory of stages in economic development?

Briefly recount the evolution of public revenue devices as monarchy and
feudalism gave way to democracy and capitalism in English-speaking
North America (105).

Although it is possible to imagine answers varying greatly, depending on learners' political
perspective or other factors, this is not what the instructor had in mind.

Note: I am aware of how carefully you will have to read the text to be able
to answer the following questions. Be courageous.

There are a number of assumptions about education in this statement and, for that matter,
about the nature of knowledge itself. It assumes that there is somehow, An Answer, a
particular statement about circumstances that will be true in all seasons and circumstances.
On a more basic level it assumes that a single text can provide such an answer. It also
assumes that for learners to essentially reproduce, in summary form, something they have read elsewhere leads to learning.

This approach to education has been called a transmittal approach to teaching. Such an approach rests on two assumptions: first, that there is an objective, measurable external reality that can be described, and second, that if an instructor “knows” something in this reality, their knowledge can be represented by the instructor to someone who will develop the ability to represent it themselves (Pratt, 1998). It is the view of knowledge that one might expect from an instructor teaching within a traditional distance education approach. Certainly it is supported by the tenets of instructional design, which have been very influential in the distance education field.

And yet not all instructors teaching within the pattern of interaction represented here seem to adhere to such a view. A course in communication and society, for example, asked students to incorporate their own experiences.

Because the subject matter of this course is closely connected to everyday interaction, your own experiences and perceptions are highly relevant to the material being covered. For that reason, each unit will include some questions to think through and discuss with people you know (066).

The instructor continues, explaining that such discussions and personal reflections should be drawn on to write formal assignments. Assignments for the course involved considering communications between people, for instance in an assignment based on popular movies:

Driving Miss Daisy: How do race, age, and gender influence the main characters’ identities, reflected in the ways they speak and the ways others speak to and about them? How do these factors influence their relationship with each other?

Clearly this kind of analysis would vary depending on who was doing it. This was made explicit elsewhere in the course materials:

Because perceptions of present events are based on comparisons with past experiences and knowledge, it is fair to say that perception is a set of
screens to filter, select, and organize experience so that it may be understood.

This statement, too, contains within it a number of assumptions. First it suggests that while there may be an external reality, it cannot be definitely described or experienced. Rather, the experience of the individual is at least as significant to their perception of an event as the event itself. In this course, this view was apparent even in the sample short answer questions provided to help students prepare for the final exam. These questions paired terms, and asked learners not to define them (in fact the instructor made it clear that definition would not be an acceptable response) but rather to explain the connection between them in the context of this subject. Paired topics like “joking/community values” and “barriers/distance” seemed to provide considerable room for learners’ creativity in responses, and the sample answer provided, labelled “an acceptable answer,” suggested the instructor welcomed that creativity.

Although the communication channels here suggest a traditional model of distance education, the view of knowledge that is suggested is not the objectivist, knowledge-transfer one that might be expected. The approach is significantly different from that taken by the economics instructor in the course discussed earlier. In these contrasting cases at least it seems that the interaction in the course does not necessarily reflect the instructor’s view of education.

**Learner-learner, self contained**

If introducing learner-learner interaction in a course creates a paradigm shift in distance education, courses using it should make this apparent. Fifteen of the courses I examined fell into the category of learner-learner, self-contained. These courses made use of electronic mail, chat rooms, or threaded discussion software to open interaction between learners. They did not provide links to external sites (Figure 6). They were “self-contained”
in that the learners and instructors within them needed to communicate only with each other, not with other Web sites or with people offline.

![Diagram of learner-learner interaction](image)

**Figure 6** Self-contained course with learner-learner interaction

The addition of learner-learner communication creates opportunities for learners to discuss the subject they are studying, comparing their interpretations in an attempt to develop understanding of the material. Some of the instructors whose courses fell into this category clearly hoped discussion would allow their students this learning opportunity. For example, a political science instructor put students into small groups and provided various questions for discussion to them (102). An instructor in a sociology of aging course provided a series of questions in each unit, titled “Things to think about,” and suggested that these questions would be discussed in weekly MOO sessions. The nature of the questions was such that they did not seem to have right or wrong answers, and thus would seem to allow space for an individual learner’s own experience. For example, in a unit on living environments:

What services would be required for older rural people living in their own homes to maintain those living arrangements? Who should pay for such services? (037)

However, the openness may be somewhat illusory. The discussion in this example is based on a model of person-environment interaction that suggests old people “...[h]ave
the highest ability to form social contacts in situations where there are mostly the same age people living nearby, like a retirement center.” This statement is informed by North American middle class WASP culture, which is hardly universal. Perhaps more significantly, the instructor herself articulated all the questions, and in advance of the course, including them within each unit, thereby implying that all students would come to the same questions, if not the same answers. Since the online discussion was not observed as part of this study, it was not possible to determine the extent to which the instructor set the agenda and whether the proposed questions were in fact addressed.

A striking characteristic of this course organization is its self-contained nature. Courses in this group did not utilize links to other sites on the World Wide Web. Although the learner-to-learner interaction encouraged may suggest that knowledge here is viewed as something that learners can bring to the class, the lack of links suggests that the instructor is retaining control on “official” knowledge. Assignments vary in this category. Most courses (13) included written assignments. Four included group projects as possible assignments. Multiple choice tests were used in seven of the courses.

**Learner-learner with Web connections**

The largest group of classes surveyed (40 courses -- 38%) were in this category. These courses made provision for learner-learner communication and also provided links to Web sites external to the course, not controlled by the instructor (Figure 7).

This is a significant change from the earlier models. It would seem to represent a loosening of instructor control on what is defined as legitimate knowledge in the course, since the instructor cannot control the content of external links. However, many of the courses surveyed here simply contained a list of links, with the implied or stated suggestion that students look at them, but no particular reason suggested for why they
might want to. The lack of direction provided might tend to lessen the value participants placed on these resources.

Figure 7 Learner-learner interaction and Web connections

The evaluation of the content of external links was largely superficial. For instance, a media studies course (003) included critique of a Web site as one assignment. Students were asked to comment on organization, readability, graphics, navigation, hyperlinks, relevance, interactivity and "...anything else you think is worth commenting on," which would presumably include content, but only as an afterthought. A course introducing students to the Internet (023) and using extensive links gave evaluation of search results as one assignment, but made no specific mention of evaluating content. A social work course on grief (020) included an extensive list of "links to useful information," and pointed out which links might be most appropriate as part of the reading for each unit, but did not provide any guidelines concerning the specific links. For instance, the unit on culture included a long list of links, and noted, "Some of these pages are specifically grief-related; others take a broader look at the cultural group; yet others are personal accounts that are expressed in cultural contexts. You are not required to read all of the content of all of these
pages, just to sample them.” A biotechnology course (019) made no use of links to suggest that biotechnology might be an area open to some debate, but rather provided links to sites such as “Invitogen: another biotech firm with a neat Website...”. The sole exception to this uninspired litany was found in a human geography course (068) that asked students to find a site that contributes to knowledge about a place in the global economy, and make “[a]n assessment of the content of the site in light of what you know from this unit...”. This was the only specific reference to evaluation of the content of a site found in this research.

The use of external Web sites was rarely significant. Their use formed part of the evaluation in only 17% of the 65 courses containing external Web sites. However, they did provide the most common means for learners to contribute to course materials, often in the form of reviewing links. This was suggested in twelve of the courses in this category.

Group projects were somewhat more common in this group, with ten courses including them. Twenty-nine included individual written assignments, and seven essay-based tests.

**Connected to Web and community**

A small number of courses (eight of the 105) required or encouraged learners to participate in activities involving people off line and provided links to external Web sites (Figure 8). A computer-mediated communications course (067) asked learners to interview someone about the effects of new technology on communications in their workplace. An astronomy education course (034) and a journal-writing course (035) for teachers each encouraged them to develop a course, teach it in their own classrooms and evaluate it. A course in the writings of W.E. DuBois (045) asked learners to organize a community seminar or teach-in on the author’s work. An eco-psycho course (050) involved off line activities as its main focus, asking learners to perform an activity in a park or outside,
and then write their reactions to it for discussion. A human resources development course (035) asked learners to attend a human resources meeting and write an evaluation of it.

Figure 8 Learner-learner interaction with Web and offline community connections

An additional three courses suggested activities involving people off line, but did not include links to external Web sites. The most interesting of these, for a course on human issues in computing, asked learners to teach a software package to a new user of it and report on their experience (041).

These courses, with their activities conducted in learners’ local communities, are similar to the project-based strategies for distance education discussed in Chapter 2. From various perspectives introducing face-to-face activity provides increasing opportunities for education. By encouraging learners to participate in an activity off line and reflect on it in the context of the course, learners are encouraged to develop a reflective approach to practice. Community-based projects get the learner away from the screen and introduce an activity that is not simply reading a text. This is particularly important in online courses,
where virtually all interactions are in the form of text. Offline activity allows people to try what they are learning in their own place, testing what they are learning against their own experience and connecting them to their local situation. This helps participants maintain their connection in their home communities, and is a way of addressing a problem in distance education writing, the view of the learner as primarily isolated from the educational institution rather than primarily living in their own communities, although at a distance from the educational institution.
CHAPTER 7:
SUMMARY, CONCLUSION AND IMPLICATIONS

This study had two purposes: to take an inventory of interaction in courses on the
World Wide Web, and to analyse the implications of the interaction. The focus was course
structure, not content or the experiences of participants. This final chapter summarizes
study findings and discusses interaction in Web courses as a technique and, more broadly,
as part of the politics of education on the World Wide Web.

Recent distance education and adult learning literature suggests that learner-learner
interaction is key to learning and education. It has been suggested that adding person-to-
person interaction to distance education courses changes what is possible to such an extent
that it can be said to be a whole new form of education—a paradigm shift. Accordingly, as
part of the analysis, claims that learner-learner interaction transformed courses from
traditional, instructor-centred approaches to learner-centred, dynamic environments were
considered. Assignments students were given were examined, since if learner-learner
interaction transformed distance education, it would seem reasonable that there would be a
connection between interaction, assignments and assessment.

Inventory of interaction

The first purpose was met by surveying 105 Web courses, all of which could be
completed without face-to-face contact between the learner and the instructor or other
students. The sample included 75 courses offered by universities and colleges, and 30 by
businesses, non-profit societies, and individuals. Approximately two-thirds of the courses
were American (68%). The courses included a broad range of subjects, from humanities to
education to computer-related topics. Details of the courses surveyed were provided in
Chapter 5.
Five potential locations for interaction were identified from the literature and observation: learner-instructor, learner-learner, learner-content, learner-media and learner-environment. For this study, the focus was on person-to-person interaction, specifically learner-learner and learner-instructor interaction. The interpersonal aspects of learner-environment were also considered: structured opportunities for learners to interact with individuals offline in their communities were counted. The complexities of learner-media interaction was considered as part of the background to the study and discussed in Chapter 3, but no particular aspect of this was surveyed. The final locus of interaction, between learner and content, was examined mostly by looking at the kinds of assignments and methods of assessment that were included in the courses. As part of this final focus though, the potential for learners to interact with content found on the World Wide Web but not specifically part of the course content was considered. The presence or absence of links to external sites, and the number of sites, was enumerated.

Several possible methods of interaction were identified and included on the survey instrument: e-mail to the instructor or other students, asynchronous or synchronous discussion forums, and offline interaction in various forms. For each course, the types of interaction available were recorded and it was noted whether the interaction was required or optional. The forms of interaction are summarized in Table 6.

Almost all of the courses (95%) provided for e-mail between learner and instructor. Learner-learner interaction by e-mail was possible in half the courses examined. Over half provided for interaction between learners and both instructor and other learners in a discussion forum, either via a listserve, Web-based asynchronous discussion group or synchronous discussion group. This interaction most closely matches what occurs in face to face seminar classes. Participants can comment on the material they are reading, pose and answer questions, and seek and receive guidance from the instructor and each other.
Typically the interaction was used in this familiar way. Very few courses (only 13%) required participants to work collaboratively on assignments. Far more common were the types of assignments familiar to anyone who has been part of the North American formal education system: written assignments (60% of courses surveyed) and multiple choice tests (26%).

Table 6: Forms of interaction in 105 Web-based courses

<table>
<thead>
<tr>
<th>Form of interaction</th>
<th>Percentage of cases</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail to instructor</td>
<td>95%</td>
<td>100</td>
</tr>
<tr>
<td>E-mail to other learners</td>
<td>50%</td>
<td>52</td>
</tr>
<tr>
<td>Chatroom (synchronous discussion space)</td>
<td>18%</td>
<td>19</td>
</tr>
<tr>
<td>Conferencing (asynchronous discussion space on Web site)</td>
<td>38%</td>
<td>40</td>
</tr>
<tr>
<td>Listserve (asynchronous discussion via e-mail)</td>
<td>22%</td>
<td>23</td>
</tr>
<tr>
<td>E-mail to individuals not in the course</td>
<td>3%</td>
<td>3</td>
</tr>
<tr>
<td>Communication with individuals offline, not in the course</td>
<td>4%</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
<td>4</td>
</tr>
</tbody>
</table>

Although learner-content interaction was not the major focus of this study, I did record the number of external links provided in each course and the uses to which they were put. External links were considered because their presence opens a possibility for learners to interact with individuals and ideas online that are not officially connected to the course, and thus controlled by the instructor. Extensive use of links might suggest that the instructor was particularly open to the ideas of others. Of the 65 courses (62%) that
provided links, only 17 required their use. Most often links were simply listed, either annotated or not, and suggested as a source of supplementary information.

**Analysis of interaction**

The second purpose, the analysis of the ways interaction was used in Web courses, was met by first categorizing courses according to the types of interaction they made possible, and comparing them within and across these categories. Courses were grouped according to the number of options for interaction each provided. The courses can be arrayed on a continuum, reading from top to bottom in Table 7, from those which provided participants with opportunities for interaction with the fewest to the greatest number of people.

**Table 7: Continuum of interaction**

<table>
<thead>
<tr>
<th></th>
<th>Instructor-Learner</th>
<th>Learner-Learner</th>
<th>Other Web Sites</th>
<th>Offline Community</th>
<th>Number of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Online Tutorial</strong></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>3</td>
</tr>
<tr>
<td><strong>Traditional Distance Education</strong></td>
<td>•</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>36</td>
</tr>
<tr>
<td><strong>Learner-Learner, Self-contained</strong></td>
<td>•</td>
<td>•</td>
<td>○</td>
<td>○</td>
<td>15</td>
</tr>
<tr>
<td><strong>Learner-Learner, Web Links</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>○</td>
<td>40</td>
</tr>
<tr>
<td><strong>Learner-Learner, Community Links</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>3</td>
</tr>
<tr>
<td><strong>Learner-Learner, Web and Community Links</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>8</td>
</tr>
</tbody>
</table>
This is one way of grouping courses, but it cannot account for all interaction that happens during Web courses. Although all forms of interaction observed were included in the six models, it is not possible to be sure those are the only types. For example, a traditional distance education course was defined as one where learner-instructor interaction was possible, but no built-in opportunity for learner-learner or learner-community interaction was present. A learner could change this pattern by discussing the subject with friends who shared an interest in it, or asking the instructor to arrange contact with another student with similar interests. Despite these limitations, arraying courses in categories was useful. It made it possible to consider whether or not the nature of assignments changed as more interaction was added to the courses.

As described in Chapter 6, some of the more interactive courses made use of a greater variety of assignments. However, I did not find evidence to convincingly support the idea that increasing learner-learner interaction in distance education forced a shift in the educational approach used in courses. If education did become learner-centred because interactive tools were made available, I would expect to see assignments that valued the experiences of learners in courses where more interaction was present. I did find some such assignments in courses with high levels of interaction, but they were also present in traditional courses. I did not find that more interactive courses always included more learner-centred assignments.

With few exceptions, the courses were modelled on face-to-face or traditional distance education. Control of the sequence and activities of the course was vested in the instructor, and learners were encouraged to approach the material in a pre-designated way. Interaction was used mostly to react to ideas introduced by the instructor. The interaction the Web makes possible opens possibilities for new educational structures. If the entire World Wide Web is seen as a potential resource, new approaches are possible. With the
great variety of information available, instructor pre-selection of all course materials might not be required. It may not be necessary for the instructor to create or even select all the materials to be studied. The Web could be seen as a sprawling Multi-User Domain, and individuals in a particular course as having agency to explore it. The instructor’s subject matter expertise and greater experience would be their guide, but would not necessarily define the outer reaches of the terrain that could be explored.

**Interaction as technique**

Four issues emerged from this study: the potential contribution of adult education to Web courses, the way in which an enactivist approach to learning and knowledge could inform course development, learner isolation and information management.

**Adult education and Web-based courses**

Few of the courses required or encouraged participants to interact with groups or individuals offline. From an adult education perspective, the extension of this kind of interaction would enrich Web-based courses. Increasing learner interaction with local communities would be a way of recognizing interrelationships that go beyond individuals. The development and exchange of ideas that could flow from such interaction could have an impact beyond the course itself.

The ideals of adult education suggest learners’ lives outside the course should be respected. There is a presumption that the instructor and the learner in an educational setting are equal. Learners bring knowledge to the course as well as obtaining knowledge from it. All three of these ideals can enrich Web-based courses.

The assumption that life outside the course is significant and important could bring a richness to online education. It is a challenge for educators to be sure that course materials are relevant and important to students. Approaching this issue from the other direction might help. If educators begin with the conviction that the learners’ lives outside the course
are relevant, it will be easier for them to provide openings for learners to make their own connections between course material and their lives.

The assumption of equality between learners and instructors would have various effects if applied to Web-based education. Learners would be encouraged to contribute to the course in meaningful ways, and to answer each other’s questions. The course participants would have the ability to influence the direction of discussion and the course itself.

The assumption that learners bring knowledge to courses suggests the educator should listen to them, and give them the opportunity to listen to one another. When adult educators have discussed learners’ pre-existing knowledge, they have traditionally been thinking of knowledge gained from experience. An extension of this idea might be useful in the online environment. Learners could be encouraged to evaluate different views of the material they found presented on Web sites based on their own experience, further enriching the class.

Taken together these three principles point to a need to allow space for adult students to communicate and reflect on what they say to each other. These ideals are not often realized in face-to-face education. The obstacles to realizing them in Web-based distance education, where course materials are developed in advance and the ability to alter course direction may not rest with the instructor, are formidable.

An enactivist approach to Web-based courses

The most significant contribution enactivist ideas can make to online education and the study of learning is the recognition that things are interconnected. The interaction that a distance education course on the Web provides learners is not, and cannot, be the only interaction in which they take part. As learners in a distance education course, individuals exist in a constant state of interaction. An enactivist perspective recognizes the “always
already there” nature of interaction and sees a course as a thread in an existing tapestry, not as a lifeline connecting otherwise isolated individuals to a source of knowledge.

This view of the learner as a part of their context, constantly interacting with, changing and being changed by their environment, is a marked contrast to more traditional views of interaction in distance education. Traditionally, distance educators trained in instructional design, focused on interaction between learner and content. Materials were sequenced for predetermined results. In a sense, instructional designers tried to narrow the possibilities for learner-content interaction, attempting to control the way the learner meets the material, on the assumption that this would assure the desired learning outcomes.

The usual timing of course development helps to make the instructional design model attractive, since it holds the possibility of a logical and sequential approach to material. The development sequence presents difficulties for educators trying to look at the process in any other way. Course materials are written before courses are taught. Since individual students are not present, there can be a tendency to view them as a kind of generic every-student: a one-size-fits-most category defined by the missing knowledge the course will deliver. Writing a course in this context, there is a strong pull to see the materials themselves as representing knowledge, a deliverable substance.

From an enactivist perspective a number of questions can be raised with this approach. The view of knowledge represented in the traditional instructional design model can be questioned, and an argument made that knowledge is not a static thing to be transmitted, but an event that occurs in interaction. Even if this objection could be put aside, the instructional design approach would still seem limited, since it seems to regard the interaction between learner and content in isolation from the rest of the learner’s life. Careful sequencing could control learner-content interaction only in a superficial way, since it would never be possible for the distance educator to control the other interactions.
(between the learner and their environment, the media of instruction and the instructor) surrounding the learner-content interaction.

From an enactivist perspective, the image of distance education as an encounter between an isolated student and a source of knowledge is an oversimplification of a complex social event. To look at the Web and other new communication technologies as providing a way out of this isolation would be to continue the same oversimplification. The teaching process occasions learning, rather than causing it (Davis & Sumara, 1997). The events that occur in a course, whether face-to-face or via the Web, are opportunities for learning, and participants do learn from them. What is learned depends on the participants themselves, and the contexts of which they are a part. Their contexts include the course itself, but extend far beyond that, and change as the learners do.

In this view, then, what is possible in distance education, and in Web-based courses? At this point only a few preliminary suggestions can be made, and they are more in the nature of possible directions that prescriptions for course design. Courses could be approached less from the idea of providing a predetermined collection of information, and more from the idea of providing opportunities for learners and instructors to engage in interactions with each other, with the media and content of the World Wide Web, and with the ideas contained within course materials. The instructor’s role would not disappear, but would change. The instructor, as the most experienced practitioner of the discipline being studied, would play important roles in the course, as a model of the approach to inquiry within the discipline, and as a guide to the literature.

Structure is important, because it contains the possibilities for, and limitations to, interaction and thus knowledge. Varela (1987) uses the analogy of a wind chime to discuss the interplay between an individual and the environment. The sounds of the chime vary with the cause of motion, be it a breeze, a touch or a strong wind. Yet the range is not
infinite. The structure of the chimes determines the range of sounds that are possible (Maturana, 1987). In the context of courses on the Web the wind chimes could be seen as the individual participants or the course. The participants will experience the course based on past and present experience as well as on the course content. The way the course and its assignments are organized, and the range of possibilities seen as acceptable, will make some interactions possible or impossible and thus change the experience of the participants.

The World Wide Web can help distance educators transcend some of the limitations of pre-packaged materials and books-by-mail, traditional means of sending materials to distant students. Access to information need not be limited by the instructor’s knowledge of what is available when the course begins. Instructors could begin their courses with the expectation that the materials used would vary depending on participants and their own particular experiences. The easy availability of literature and other materials might paradoxically have the effect of lessening what I feel has been a too-exclusive focus on course content in planning for distance education. The focus on content has contributed to a sense that students’ lives and their communities are beyond the consideration of the distance educator, and thus can be ignored. In an enactivist view the student is inseparable from their context, whether that context is ignored by the instructor or not. A deliberate attempt by educators to acknowledge and embrace this introduction of ideas from each learner’s own context could enrich a course.

From this perspective the potential for Web-based education is exciting. In Canada it might be especially useful for those who live outside areas well-served by traditional educational institutions. Sixty years ago Canadian adult educator Moses Coady (1939) wrote of the failure of education for rural communities, since its near-inevitable outcome was to pull people who could afford an education away from rural homes and ensure that their futures lay in the city. Web-based education, designed in a way that recognizes the
interaction of learners and their communities prior to the course, supports that interaction as
the course progresses, and expects learners to explore new ideas from their own contexts,
could be part of an educational option that would not further disrupt rural communities.

**Increase or decrease in learner isolation?**

In a traditional distance education model the learner is viewed as isolated, connected
to the educational institution by a communication link with the instructor. A course that
includes learner-learner interaction, as most of those surveyed did, allows for more links
between the learner and course materials, and presumably reduces learners' isolation from
the instructor, other learners and the educational institution. However, the perception of
increased or decreased isolation depends on what the Web-based course is contrasted with.
If the alternative is a night school class, with its opportunities to meet local people with
shared interests, then online courses might be more isolating.

Online education can play a valuable role in teaching people to manage the volume
of information they are exposed to. Courses can provide exposure to online information in
a critical environment. Working together, instructors who are knowledgeable in a field and
students motivated to learn about it can explore what is available, developing standards for
credibility that evolve over time, and can learn to evaluate rapidly-changing information
against their own articulated standards. Learning to evaluate information is part of face-to-
face education as well but the online environment makes it even more necessary. In a
typical educational environment such as a university or college, information arrives via
lectures, book or journal articles, pre-screened for the learner. The World Wide Web
provides no such function.

**Interaction as politics**

Thus far the analysis has dwelt on interaction as technique, or as an aspect of course
structure. But, as is so often the case in adult education, there is more to it. No one is
arguing against the need to have meaningful interaction in courses, although achieving it may be difficult. More importantly, having or not having interaction, and the form in which it is provided, speaks volumes to learners about the assumptions of those who designed the course; their views of not only learners and instructors, but of society and politics, broadly defined. All education is a social phenomenon, and must be considered in a social context. In the remaining part of this chapter I reflect on this, transcending the notion of interaction as technique and exploring broader issues concerning online education. This view raises many concerns. Four will be addressed here: the location of education, individualism versus a cooperative approach, globalization and its impact on Canadian civil society, and finally panopticism and life online.

**Locating education**

Education on the World Wide Web is different from face-to-face education because of its location—not just in cyberspace, but in participants’ daily geography. Physically a learner might access their online course from home, work, the library or elsewhere. Traditionally North American face-to-face education happened in a building especially created for the purpose. Education was separate, clearly distinguishable from the rest of life (the so-called “real world” beyond the classroom). By contrast, the online environment is not just for education. It is for business, communication, entertainment and education, among other uses. Located in this varied environment, education could become a more integrated part of people’s lives, providing a place where genuine lifelong education can occur. Alternatively, it can be seen as just one more purchasable commodity. In these early days of Web-based education, it is not clear which, if either, will ultimately be the dominant vision. The position of the learner in interaction with others is not identical in these two possible futures. Should education on the Web be seen mostly as a commodity, the participant will be positioned mostly as a consumer. If it is seen as a component of
lifelong learning, the learner can be viewed more as an individual participant in a collective, societal process.

Consideration of place leads to the body, and its location online. In face-to-face courses, the body is both present and absent, acknowledged and denied. Think of a classroom and the messages bodies send: boredom, fascination, disbelief and anger, conveyed in a vocabulary of posture, gesture, change in tone of voice and facial expression. Online, the body is apparently not present. Yet I think of my physical feelings as I participate in online discussions: sometimes sore eyes, a tired back, the impatient click of my mouse on the delete key. The use of the computer for education in my own experience forces a kind of reduction, pushing me to pay more attention to my body as I sit in front of a computer screen.

At the same time, on the Internet, the body is concealed. You represent yourself as a textual persona, as old and wise or young and eager as you can write. The privileges of appearances seems to disappear—although not entirely, since the privileges or otherwise of appearance affect and shape our written voices. Nonetheless, the online world privileges those who are most articulate by making the voice textual.

**Individualism versus cooperation**

Whether online education is more cooperative or individual depends on the way the course is organized, just as is the case in face to face education. Assignments can be cooperative, requiring learners to work together and making mutual discussion a major part of the content. Alternatively learners can be unconnected to others and encouraged to compete for marks and references.

The difference matters because increasing individualization seems to play into a corporate agenda for education, viewing people as consumers rather than as members or integral parts of communities. This issue goes beyond the current debates about the
existence of online communities. Increased individualism appears to damage offline
communities, leading to a decline in compassion and encouraging people to feel collective
action is impossible (and individual self-protection, while crucial, unlikely to succeed). But
it is by no means clear that online education is part of this trend. Electronic communication
has made various kinds of innovative collective organization possible, and these uses will
likely expand as access to the Internet does. The ultimate utility and social construction of
online communication is not at this point fixed or predictable.

Canadian civil society and globalization

The World Wide Web breaks down the privilege of location for educational
institutions. There is no particular reason for a student in Vancouver to take an online
course from UBC or Simon Fraser. In theory they can choose from a global array of
courses. In practice what seems like global choice is most frequently a choice of American
institutions of higher education (Wilson, Qayyum & Boshier, 1998). The problem with
this is not that information coming from the US is wrong: it’s simply that the philosophy
and tone of a course varies depending on its source. The physical and cultural location of
the course designer has an impact, making a difference to content and to teaching approach.
For Canadians, the negative potential of globalization includes homogenization,
corporatization, and Americanization.

There is also positive side to a global blend of participants. If courses allow for
input from learners and encourage debate and discussion, they create a chance for increased
awareness of differing approaches and beliefs. The online environment may become one in
which words can be judged on their own merits, not by other indications of the position of
the speaker.

Traditionally adult education has been seen as part of the fabric of civil society on a
local level. A common form of adult education is the continuing education class—at a night
school operated by the school board, for example. In recent years this form of education has suffered from cuts to educational budgets. The extensive development of general interest courses on the World Wide Web might exacerbate this process. Is it the case that eventually the general interest classes that people take at night school in their local communities will be superseded by online courses? A worst-case scenario might involve more and more largely white North American middle-class people meeting in the online world, safe from the unpleasant and unfamiliar input and feelings of others—the people of colour, the working class, the new immigrants, old women and tradespeople they might have had to encounter in face-to-face adult education. The online classroom could become a sanitized, textual environment where anything different is unlikely to enter. Those who hold views outside the mainstream could be easier to intimidate with the superior textual skills of the traditionally well-educated if they did find the virtual door.

Groups who have been historically less likely to participate in adult education (including the elderly and the working class) are also less likely to have access to computer equipment, online time and training, and so are excluded again. The tremendous surge of energy and effort directed at getting courses on the Web might be taking energy away from face-to-face education, further reducing their access.

Web education is in its earliest days. At the moment it seems to pose little challenge to more traditional venues for adult education, such as night school or continuing education courses offered by local institutions. However, a significant number of non-credit courses (38 of those surveyed in this study) are offered on the World Wide Web. The subject is frequently computer skills of one kind or another, but the sample for this study also included courses in such topics as genealogy and the writing of family histories. Some were offered for a fee by businesses. This raises two concerns for adult educators. First, if Web-based courses on a wide array of subjects become available, as seems likely, they
may draw participants who otherwise may have taken local, face-to-face non-credit courses. Ultimately this could be damaging for place-based adult education providers. More significantly, it could eliminate the role that adult education courses have historically played in building local communities.

Second, the migration of continuing education courses to the World Wide Web could go hand-in-hand with increasing privatization of adult education. Many public institutions in Canada that offer non-credit adult education do so on a cost-recovery basis: that is, the continuing education course must pay for itself. However, there are no-cost benefits to the courses that would be lost if they were not part of the public education system. These range from marketing benefits (being associated with a college, university or school board increases participant confidence and possibilities for attracting an audience in the course) to the use of existing infrastructure. Face-to-face courses offered by for-profit business tend to be more expensive than those offered through public institutions since they do not enjoy access to the benefits mentioned here, and also because an actual profit must be generated.

Thus the privatization of adult education raises concerns about access and the range of courses that may be offered. Ultimately, in a business environment, courses that are most popular will be the ones that are most available. Although this kind of financial pressure affects face-to-face settings as well, public institutions have more interest in serving the range of people in their communities, even if courses simply break even rather than making money. Many businesses have no such concern. In the world of the Web, it is in any case difficult to insist on a local constituency that must be served.

Free access to information, or panopticon?

The online world gives access to a huge amount of information, but explorers cannot move through it as they can through a physical library, looking at whatever catches
their eye and leaving no trace. We move through the Web collecting electronic records and
leaving the evidence of where we have been stored on computer hard drives. Learners can
be observed, in online classes, at every moment. Unless they speak in a deliberate and
carefully labeled-as-such aside—through private e-mail to another learner for example—
y they are constantly aware that they can be seen.

The most seemingly ephemeral comment is lasting online, and the speaker
ultimately lacks control over where it will end up. An in-person comment will eventually
be forgotten. An online comment exists as text on multiple machines. It can be revived at
any time, forwarded and re-forwarded far beyond the confines of the class. In addition,
administrators can give access to anyone without learner awareness.

It is ironic that this study is itself positioned as part of that panoptic gaze. Since I
looked only at public Web pages available to anyone without a password, it was not
necessary for me to obtain permission from those whose work I was observing, nor make
them aware of my virtual presence. Panoptic observation applies not only to students, but
also to instructors and those who design courses, and one can never be sure exactly who is
in the tower (Boshier & Wilson, 1998).

**Educational improvement and the lure of technology**

Online education, at this point in the late twentieth century, is sexy. It has arrived as
the next ‘killer app’ and there are fortunes to be made. This is the education system’s
opportunity to be entrepreneurial, and distance education’s chance to abandon its poor
relation status. This kind of allure and pressure affects decisions. The unattractive scramble
that is occurring as higher education hurries online makes it easy to come to negative
conclusions concerning the potential of the Internet, and the World Wide Web, either for
distance education or as a supplement for face-to-face courses. It can be condemned as
expensive, trendy and elitist. Many courses on the Web can be seen to reproduce the
limited, restrictive worst of face-to-face courses, with the addition of a panoptic element impossible to sustain in face-to-face encounters. But it’s also possible to take a more positive view, recognizing the potential of cyberspace to allow for the amplification of alternative voices and a free exchange of ideas. Education, whether online or face-to-face, is a social phenomenon, not primarily a technological one. Ultimately the face of Web-based education will be determined not by technological developments, but by social and political decisions made both online and offline. As educators at the end of the twentieth century, our task is to evaluate what is available, make the best decisions we can, and never lose sight of the real human beings who will be affected by our decisions.
REFERENCES


APPENDIX I: DATA COLLECTION FORM

Case ID__________________

Date completed: __________________

World Wide Web address: ________________________________

Found via: ____________________________________________
(specify search engine, library site, etc)

Details of access: ______________________________________
(anything special worth noting, ie via university home page, etc.)

Course title: ___________________________________________

Sponsor: __________________________ (name)
  __________________________________
  university
  private college
  public college

Instructor ____________________________
Instructor e-mail: ____________________________

Country of origin ____________________________

Subject area: ____________________________

Level of course ____________________________
  non-credit
  college

Person-to-person interactive possibilities

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<th>Required?</th>
<th>Encouraged?</th>
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<td>instructor?</td>
<td>assessment?</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>e-mail to group</td>
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<td></td>
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<td>chat room</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>e-mail to other individuals</td>
<td></td>
<td></td>
<td>n/a</td>
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Describe:

Activities involving off-line community

Describe:
### Person-to-person interactive possibilities

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<td>other (describe)</td>
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### Learner-content interactive possibilities

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<td>Other (describe)</td>
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### Assignments

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<td>Yes \ n/a</td>
<td>Yes \ n/a \ n/a</td>
<td>Yes \ No</td>
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- Home page printed & attached: Yes, No
- Evaluation/Assessment information printed: Yes, No, Not available
- Expectation information printed: Yes, No, Not available
- Assignment info printed: Yes, No, Not available
## APPENDIX II: COURSE ADDRESSES

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