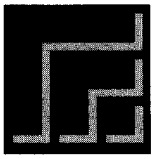


CHAPTER 1

# Fundamentals of Distance Education

**In this first chapter we introduce some basic ideas about distance education, and in particular the idea of a systems approach to the study and practice of this field. A distance education system should include the components of content, design, communications, interaction, learner environment, and management. We suggest that the systems model helps us understand distance education; it helps us analyze and evaluate what is sometimes called distance education but may not be; it provides a model for good practice at all levels.**

The fundamental concept of distance education is simple enough: Students and teachers are separated by distance and sometimes by time. This contrasts with the ancient tutorial, in which a teacher and an individual learner met at the same time and place (as they still do at the Universities of Oxford and Cambridge), and the more familiar contemporary model of instruction in a classroom, where a teacher talks to a group of learners, all together at the same time in the same place.

If teacher and students are not together in the same place or together at the same time, they are separated by distance, and as a result it becomes necessary to introduce an artificial communications medium that will deliver information and also provide a channel for interaction between them.

The use of printed and electronic technologies as the primary form of communication is the first and most obvious characteristic that distinguishes distance education from other forms of education. Using such technologies opens up a range of exciting new ways in which instructors can present information and conduct their interactions with the learner. The successful use of communication technologies, however, requires special design techniques and more

careful planning and production than is usual in classroom teaching. Being separated from their instructors, students who are learning at a distance often need advice and counseling about their study problems. Furthermore, ways must be found for administering and evaluating both learning and instruction.

We must deal with the questions of where, when, and how students will study if classroom facilities and the structures found in classrooms are not available. As institutions and even states and nations begin to think how to introduce distance education into their existing educational systems, new policies have to be developed. Sometimes new institutions or departments or consortial arrangements have to be set up. As you can see, an idea that is relatively simple and straightforward becomes quite complicated when you start to think about it a little.

## A Definition of Distance Education

We will use the following working definition throughout this book:

> Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements.

Because distance education aims to provide instruction in places and times that are convenient for learners rather than teachers or teaching institutions, many people use the term "distance learning" as a synonym for distance education. We understand that this is not strictly accurate, since in education our interest is in learning that is deliberate and planned, and therefore with teaching as well as learning, nevertheless, when we cite authors who use the term "distance learning," we will use it also.

We cannot emphasize too strongly that distance education is much more than simply using technology in a conventional classroom. We will of course describe many technologies in this book, but the book is not really about technology. It is about the consequences of using technology on such subjects as course design and delivery, interaction and learning, management and organization.

## Levels of Distance Education

Distance education exists at a number of different levels. To help us sort out these different levels, we will use a typology developed by Michael Mark (1990). Mark (who chose to use the term "distance learning") distinguished these four levels:

1. **Distance Learning Program** These are activities carried out in a conventional college, university, school system, or training department whose primary

Distance education aims to provide instruction in places and times that are convenient for learners rather than teachers or teaching institutions.

responsibilities include traditional classroom instruction. In recent years many faculty have chosen to teach their courses off-campus by means of audio- or videoconferencing, simply adding the distant learners to their conventional class. This is sometimes referred to as the "craft" approach to distance education, since it usually consists of a single teacher working alone, as contrasted to working with a team in a systems approach. A distance learning program does not usually have its own faculty or administrative services.

**2. Distance Learning Unit** A special and separate unit within a conventional college, university, or school system that is dedicated to distance learning activities. Such a unit will normally have administrative staff whose sole responsibilities are distance education; it may also have dedicated faculty, though most call on the faculty of the parent body to provide most of the teaching for the unit. The extension divisions of most universities are illustrative of this level of distance education.

**3. Distance Learning Institution** The sole purpose of the institution is distance education. All activities are exclusively devoted to distance education. Such an institution will have a faculty and administrative staff whose duties are different from those at a traditional college, university, school system, or training department. The British Open University (Chapter 2) is a world-famous example of a distance learning institution.

**4. Distance Learning Consortia** Consortia normally consist of two or more distance learning institutions or units who share in either the design or delivery of programs, or both. The National University Teleconference Network (NUTN) and "Star Schools" are examples of such consortia.

This distinction among the different levels of distance learning providers will be used throughout the rest of the book. It will be useful to you as you read about distance education to try to identify whether what is being talked about is at program, unit, institutional or consortium level, since the term is used carelessly—though not, we hope, in this book!

Since it would have been tedious to refer continuously to programs, units, institutions, and consortia, we have often used the term "distance education organization" to cover them all.

### Courses and Programs

In the literature, and also in this book, you will find reference to "courses", and also you will find the term "programs" used with a different meaning from "distance learning program" as explained above.

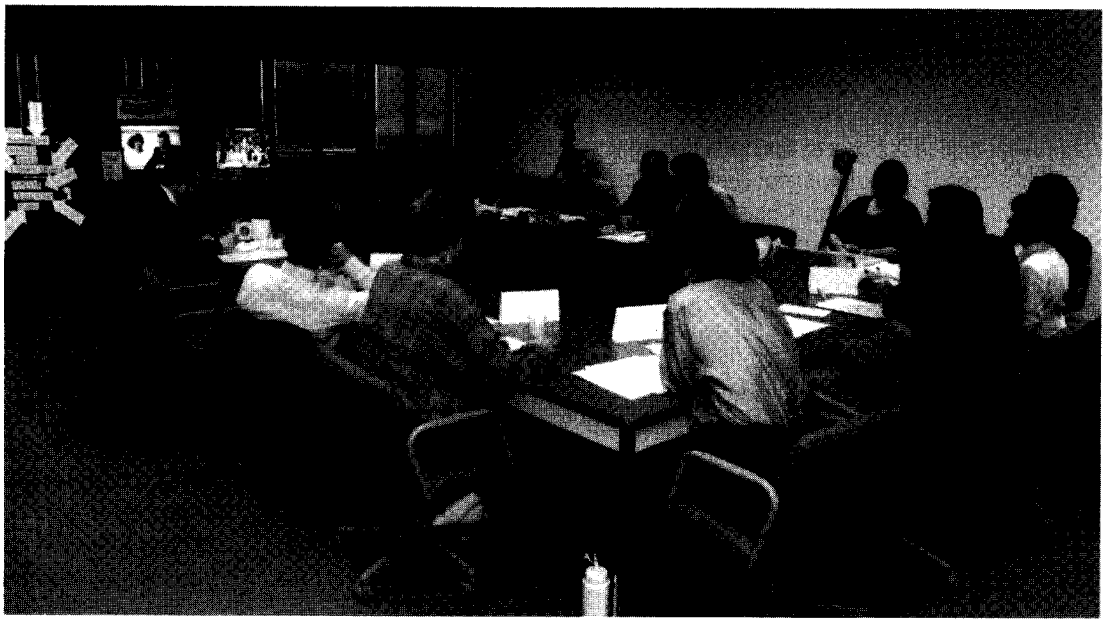
"Courses" are produced at all levels of distance education. In a distance education program as defined above, the course is based on the practices and standards of the parent institution. In a conventional American university, a graduate course is likely to be around 150 hours of study with about 45 to 50 hours of direct contact between instructor and students. Therefore the distance education course, usually taught by teleconferencing, will be of the same duration. At the British Open University—a distance education institution—a course is around 450 hours of study with little or no direct instructor-learner face-to-face contact. In all cases a course will at least have learning objectives, one or more teachers, a medium of communication, and content, or subject matter.

The word "program" is often used in a number of senses besides those defined above. Sometimes "program" will refer to audio or television programs that make up part of a course. Sometimes an institution, unit, consortium, or program will refer to its "program" as a generic label to indicate its total offering of courses.

Throughout this book we have tried to be as specific as possible in using these terms; the meaning will usually be clear from the context. We hope that this brief discussion will at least alert you to exercise caution as you encounter these words and to pause to ask yourself what different authors mean when they use them.

## A Systems Approach

We believe that a systems approach is very helpful to an understanding of distance education as a field of study and is essential to its successful practice. Throughout this book we often refer to distance education systems, and even



This class meets with their instructor and with groups in Mexico, Finland, and Estonia as well as the United States, using audio, video, and computer conference technology.

when we do not use the term, our thinking is influenced by a systems perspective.

A distance education system consists of all the component processes that make up distance education, including learning, teaching, communication, design, and management, and even such less obvious components as history and institutional philosophy. Within each of these broadly named components are subsystems, which are systems in themselves. For example, there is a subsystem in every distance education system that deals with course design, one that includes many component activities working together so that a course is produced with quality, on time and at acceptable cost. The course design subsystem links to the other subsystems to form the total system. While we may choose to study each of these subsystems separately, we must also try to understand their interrelationships. Anything that happens in one part of the system has an effect on other parts of the system, so as we focus on any one part of the system we need to hold in the back of our minds a picture of the total context.

The systems model provides a tool that not only helps us recognize many of the issues that separate distance education from conventional education, but also helps us distinguish good distance education from bad. Historically, neither teaching itself nor the organization of education has been very systematic.

Distance education courses have been developed and delivered in a very piecemeal and unplanned fashion. With a systems perspective we can see why this had unfortunate and unsatisfactory outcomes in terms of students' learning or cost-effectiveness, or both. In future we think it will be better for students, teachers, and educational institutions if every distance education course was designed and developed in a systematic way and if every distance education organization is developed, as other modern agencies are, as a total system.

## Systems in Practice

While a systems view is a good conceptual tool that helps us understand and analyze distance education, it is also a tool that must be applied in the practice of distance education at any level.

Following a systems strategy, each component process in a distance education institution, unit, program, or consortium may be developed and operated independently to some degree, but good quality requires that the development and operation of each component be controlled in such a way that it is fully integrated with the development and operation of all other components, making each supportive of the others.

This systematic approach can and should be applied in the development and delivery of every course. When a distance education course is developed in a system, there is a control mechanism that ensures that all the component processes are well integrated and interact with each other. Then the quality of the final product—that is, the course—is greater than could be achieved by any of the component contributors acting alone.

When a systems approach is applied at the level of an organization, a state, or a nation, the majority of the distance education resources of that organization, state, or nation are integrated. In such a system, every course is planned to take into account how it impacts on every other course, every piece of every course is carefully designed to fit with every other piece, every technology is employed in harmony with every other, what an instructor discusses with students fits with the illustrations included in a study guide, the learner support personnel have access to specialists within the providing organization to deal with the issues arising at each step of a course, and so on.

## The Need for a Systems View

A common misperception among educators who are not familiar with a systems approach is that it is possible to benefit from introducing technology into education without doing anything to change the other ways in which education is currently organized. They think that by moving cameras, computers, and microphones into the classrooms, schools, universities, and training departments, they can increase enrollments, provide new curricula, and save money without doing anything else. According to this view, once the technology is in place, there is little else to be done except to let teachers get on with practicing

their craft as they have always done. They decide what to teach, prepare the lessons, and interact with students via the camera, computer, telephone, or some combinations of these.

Alas, this is a very immature view of distance education, and it won't work. It is not possible to improve quality, provide for more students, and lower costs without reorganizing education according to a systems model. An analogy of the situation we face can be found in the airline industry. In the early days of commercial aviation, passengers were met by the pilot and an assistant on the runway, paid for their tickets, walked with their bags to the airplane, and were then flown to their destination. The organization of the process of passenger transportation was equally primitive to the airplane.

Today, airline organization depends on a systems model in which there is specialization of labor—there are many hundreds of different specialized jobs—and a sophisticated, computer-supported workflow that ensures everyone's work fits with everyone else's. No single individual, not even the pilot, is able to move the passenger without the contribution of hundreds of other workers, including technicians, communications specialists, and administrators of all kinds. The result of this organizational feat is the provision of high-quality service at a lower passenger cost to millions of travelers than could have been imagined at the beginnings of airline service.

When we compare the airline with a school, university, or training department, we arrive at the heart of the misconception about distance education. As with the airline, a distance education system only becomes cost-effective when it can take advantage of economies of scale. This means that the larger the number of users of the system, the lower the cost for each person. This concept, so familiar in other walks of life, comes about as a result of another common practice that the systems approach makes possible—the "division of labor."

In distance education, especially bearing in mind the different technologies that are available, you cannot just "go it alone" and maintain high quality and low costs. Strangely, education is one of the few areas of modern life where division of labor, or specialization, is still not practiced to any great extent. In traditional classrooms, individual teachers develop and deliver their own courses. They try to be effective communicators, curriculum designers, evaluators, motivators, group discussion facilitators, as well as content experts. This is an extremely wasteful use of human resources, when the content and objectives of so many courses are identical, and it produces wide variation in quality of education.

Simply adding a new technology to this "craft" approach to teaching will not give good distance education, and because the capital costs of the equipment needed are so high and the resources and time required to develop good courses are considerable, it is not financially viable either. Instead, courses need to be developed by teams of specialists and taken by many students across a large number of educational institutions. Just as it is not simply the skill of a pilot even when added to new technology that makes an airline work, so neither the teacher alone nor the technology will make distance education work, though of course these are both critical components of any system.

The biggest challenges facing education today are for legislatures to develop policies that require the development of a total systems approach for distance education, for administrators to redistribute human and capital resources into a total system, and for teachers to be trained to work as specialists within such a system.

## Components of a Distance Education System

Figure 1.1 presents a general systems model that describes the main component processes and elements of a distance education institution, program, unit, consortium, or course. These are the common components that will be found at all levels and types of distance education. There must be sources of knowledge or skills that will be taught and learned as well as a process for finding out what students need to learn and for deciding what particular content will be taught. There must be one subsystem that arranges the design of courses and another that provides the communications services to teachers, learners, and administrators. Instructors and others interact with students to help the learning process. There must of course be learners in their different learning environments. Finally, at the most general level, there must be an organization with a policy and a management structure that controls and administers the various parts of each of these subsystems.

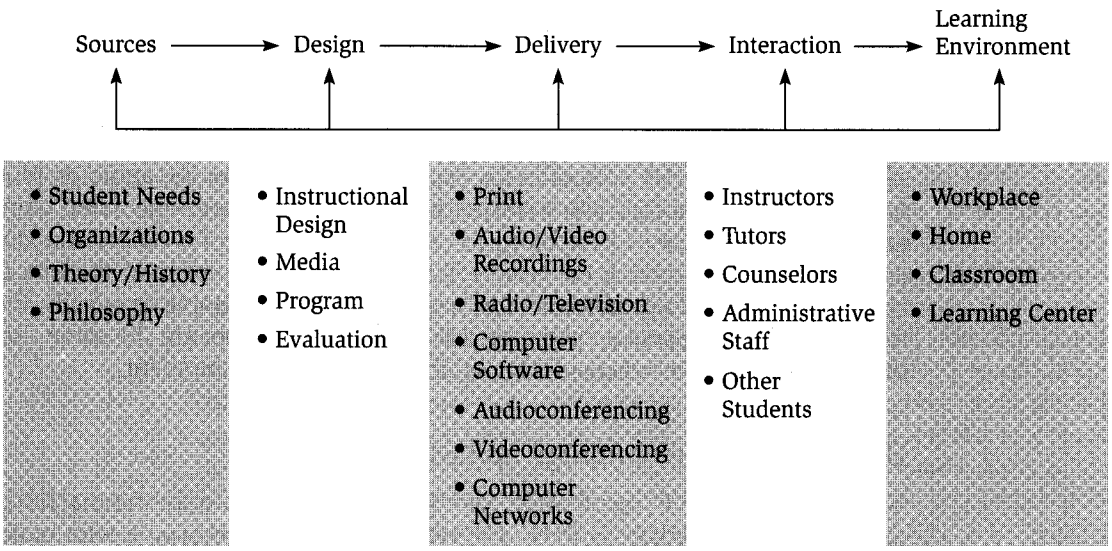
We will now examine each part of this system briefly, and we will later focus on each of these components in turn.

### Content Experts and Other Sources of Knowledge

The responsibility for deciding what knowledge will be taught by an organization (whether it be a university, college, school, or training department of a corporation, government, or voluntary agency) is that of the organization and its faculty—the people who know their field, its literature, theory, contemporary practice, and problems. Decisions will be made in the light of the organization's educational mission and philosophy, reflected by the philosophy of its teachers, and this in turn will be determined by the organization's history and the history of education in the country in which the organization is located.

For most distance education organizations it is also important to know what knowledge students themselves feel they need, and to develop courses that take into account what they want to learn. Students may also be regarded as potential sources and creators of knowledge, and courses may be designed to employ project and other self-directed learning activities. The degree to which a distance education organization or course might draw on students as a source of knowledge will be influenced by the educational philosophies of the organization and its faculty. There are many different ideas about learning and teaching, and before we can understand an educational organization or its courses, or analyze them or evaluate them, it is necessary to be clear about what particular philosophy is being emphasized or adhered to.

**Figure 1.1 A Systems Model for Distance Education**




## Design of Courses

Producing distance education courses involves many kinds of design expertise. Since instruction is provided through media and delivered by technology, the media materials need to be designed by individuals with a knowledge of instructional principles and techniques as well as knowledge of the technology. While there are content experts who have both instructional design skills and knowledge of technology, it is better if these responsibilities are carried by different specialists. The instructional designers should work with the content experts and together agree on such matters as the objectives of the course, the exercises and activities the learners will undertake, the layout of textual materials, the content of recorded audio- or videotapes, and the questions for interactive sessions by audio-, video-, or computer conference.

Graphics designers, producers, and other media specialists should be brought in to turn the ideas of the content experts and instructional designers into good-quality course materials and programs. Decisions must be made about which part of the instruction can most effectively be delivered by each particular medium. Finally, evaluation and research experts must plan how to evaluate individual student learning as well as the effectiveness of all aspects of the distance education course in order to ensure that it works—that is, meets the needs of students and the teaching organization and provides cost-effective instruction.

Because so many skills are needed to design a distance education course, one of the key characteristics of most successful distance education courses is that they are designed by course teams in which many specialists work together.

## Communication of Information and Interaction via Technologies

In all education there has to be communication between a teacher or a teaching team, and the learner or learners. In distance education this communication takes place via some form of technology. The technology may produce printed media (mainly books and study guides) or programs on audio- or videocassettes, radio or television broadcasts, computer software, audio, audio-graphic or videoconferencing, or computer networks (i.e., computer-mediated communication). The use of technology to carry the messages of teachers and students, rather than relying on face-to-face lecture, discussion, and the blackboard, is what makes distance education so novel to most people. Ironically, the technologies that seem so challenging to so many educators are the same that they are immersed in when seeking information and entertainment.

## Distinguishing Technology and Media

When we talk about "technology," we are describing not only the machines that distribute messages but also the organization and the people who make them work. Technologies include the postal system, radio and television broadcasting companies, telephone, satellite, cable, and computer networks. What is distributed through the technologies are mediated messages, or symbol systems, and these we usually refer to as "media." The symbol systems (the media) that carry the messages by means of the distribution systems (the technology) are typically text in books and study guides, sound in audiotapes, pictures in videotapes, or the text, sound, or pictures that make up a teleconference.

For example, the Internet is a technology, an organized network of computers, big and small, and users linked by telephone lines of several types; the messages sent on it are usually in the text medium, though increasingly they are in video and audio media. The technology of mail distributes the media of printed words, data and pictures; sound on audiotapes; moving pictures and sound on videotapes; and all these on computer discs. The technology of radio and television broadcasting distributes messages by sound, and pictures at random through the air. By the technology of satellite, cable, telephone, and computer networks we can distribute text, sound and pictures from point to point or point to multipoints, so the messages may be aimed at particular groups or particular individuals. Correspondence by mail may include sound, text, or pictures by video, but is distributed mainly to individual learners.

Thus, each technology can support the use of a variety of media: print (words and pictures), sound (voice and music), and video (pictures, sound, and motion). Each medium has different characteristics, which also vary according to the technology that distributes it. For example, certain books, audiotapes, or videoconferences are different in the ways they support varying degrees of abstractness and concreteness or how they impact social presence and intimacy. Each of these media support varying degrees of structure in teaching programs, different degrees of dialog between teachers and learners and among learners,

as well as differing degrees of self-directedness of the learners. This is an important theme that will be addressed further in Chapter 10.

## Interaction: The Role of Instructors

As in all education, it is important for distant learners to have sufficient interaction with their instructors to allow an appropriate degree of exchange of ideas and information. Many educators also feel it is pedagogically important to have interaction between learners. The nature and extent of the interaction that would be deemed appropriate varies according to the organizational and designers' teaching philosophy, the nature of the subject matter, the maturity of the students, their location, and the media used in the course.

One of the key differences between distance and conventional education is that in a distance education system it is common for the interaction in a course to be conducted by an instructor who is not one of the designers or content experts of the course. As explained above, in a total systems approach, courses are usually designed by teams of instructional designers, media experts, and content experts. The cost of such teams and the cost of media is high, and the numbers of students that must take the course for it to be cost–effective is greater than in conventional education. Because of the large numbers, it is not possible for the designers to also be the instructors.

Neither, from a pedagogical point of view, is it desirable they should be, since instruction requires a special set of skills, different from those of designers and subject experts, and is better done when it is the work of persons who devote themselves to the study and development and practice of those skills. Thus the normal procedure in a total systems approach to distance education is that once the courses have been designed and delivered by correspondence, by radio or television, by satellite or computer, students are allocated by the teaching organization to instructors, often referred to as tutors, who interact with them to provide individualized instruction on the basis of the designed materials.

The interactions among instructors and students will be based on issues and questions determined by the course designers and might be conducted in real-time by means of teleconference technologies. While the teleconference provides for very fast interaction, this interaction is usually in a group setting. Outside the United States, even today, interaction is most commonly achieved by means of written communications with a tutor through the mail. In a total systems approach, the course design team sets assignments based on the content of each unit of a course, and the assignments are undertaken by individual students who send them to their personal tutors by mail. The tutors read, comment and return the assignments by mail to the students, and perhaps then discuss by telephone or even in person. Even though the pace of this interaction by mail may be slow, it is inexpensive and allows for a high degree of individualized attention for each student.

In the future we are likely to see more use of desktop work stations that combine both textual interaction by computer and sometimes audio and video communications simultaneously. These provide the same individualization as

the correspondence course, together with the teleconference's immediacy of interaction. Such technologies, of course, are still expensive today and not available to most distance learners.

As well as interacting with instructors whose main job is to help them learn the content of the course, students may also interact with counselors who make suggestions about study techniques or help to solve academic or even personal problems that interfere with learning. Students will also interact with administrative staff when registering for courses or checking their progress. Ideally, a distance education course also provides an opportunity for students to interact with each other both synchronously by teleconferences, as they would in a traditional classroom setting, and asynchronously via computer bulletin boards and mailing lists. Correspondence–based distance education courses sometimes include special face-to-face meetings to provide group interaction when designers determine that such interaction is necessary.

## Management and Administration

Another aspect of interaction is the administration of distance education courses and programs. Managers are responsible for assessing the needs of learners who are not easily accessible. Since distance education usually uses expensive technologies, the funds required to produce courses are substantial, and management must allocate them among competing proposals. Administrators must ensure that money, personnel, and time are managed so that courses are produced on time and numerous work tasks fit together. Suitable faculty and staff must be recruited and trained. Since instructors are usually at a distance, special procedures must be developed and maintained for monitoring and supervising them. Feedback and evaluation mechanisms are vital because if any part of the system breaks down, the whole system is in jeopardy.

Management must also participate in the political process, helping policymakers to understand the potential of distance education, obtaining funding, and bringing about the organizational culture change that is needed to accommodate this new form of education.

## Learning Environments

In any distance education organization, a great deal of attention must be given to the nature of the learning environment. Students may study course materials and may interact with instructors in their workplaces, at home, in a classroom, at a learning center, or even when they travel. Many stories are told about distant learners on battlefields, in submarines, in lighthouses, and in prisons. Learning in such places and in the workplace or at home presents some real challenges because such settings are subject to many kinds of distractions and interruptions that make learning difficult.

To overcome these potential problems, students must consciously acquire the skills and habits of being effective distant learners. They must, for example, find their own times and places where they can study comfortably. This

may mean scheduling a "training period" at work or a "quiet time" at home, with the cooperation of co-workers or family. The proper design of distance education course materials can also affect the success of learning in the workplace or home. Most designers believe that courses should be organized into very short, self-contained segments with frequent summaries and overviews. Some emphasize the need to link academic content to real-life work, community, and home issues that will help students integrate their study with everyday problems, so that instead of being distractions, these become part of their learning. Counselors can be especially helpful in assisting distant learners to make the personal and social adjustments that learning at home requires.

The environment of students whose courses are delivered by teleconferencing is usually that of a small group in a classroom or conference room. To take advantage of such a setting, instructional designers should design activities that involve interaction among the members of each group, and perhaps also interaction with groups at other sites. It is also desirable to have a "site coordinator" who ensures that the teleconferencing equipment is operating properly and the room facilities are satisfactory. Again, there are certain skills that make learning in such environments more likely, and these skills can be consciously modeled by the instructor and monitored by the site coordinator. For example, how much "off microphone" talk to allow in an audioconference site is an issue that should not be avoided.

If possible, learning centers should be located in geographic proximity to the student's home or workplace. These centers can then play many valuable roles, such as providing instructional materials and equipment, carrels for individual study, or rooms for group meetings or private meetings with tutors or counselors. In any event, learning centers need to be run by a knowledgeable administrator who may need a support staff, depending on the center's size.

## Interdependence of Elements of a Distance Education System

The elements that we have introduced above—content or knowledge, design communications technologies, interaction, and learning environment and management—are essential to all distance education organizations and courses. Even with this cursory overview, it should be clear that there is a great deal of interdependence among these elements. For example, the exact nature of the design, the communications technology used for delivery, and the interaction depend on the sources of knowledge, the student needs, and the learning environment in a particular course. Selection of a particular delivery technology or combination of technologies should be determined by the content to be taught, who is to be taught, and where the learning will take place. Design of the instructional media depends on the content, the delivery technology, the kind of interaction desired, and the learning environment. All these will be influenced by policy and management. Furthermore, changes in one component of a distance education system have immediate effects on all of the other components.

Unfortunately, in most organizations today the careful design and management that should characterize a total systems approach are nonexistent. In most organizations it is one part of the system that is favored, and usually just one part of one part! Quite commonly, the communications technology receives the money and attention, or more likely, an organization may focus its attention on just one of the many communications technologies that are available. Even the best communications experts will fail if the other elements of the system are neglected. A fundamental message of this book is that distance education should be conceived of and developed as a *total* system, giving equal attention to all the above interacting components if it is to be practiced successfully. Paying attention to one of the components without regard to the others is a recipe for disaster.

## System Inputs and Outputs

Another way of looking at the interrelationships among the components in a distance education system is to use a common technique in systems modeling: viewing the system in terms of inputs and outputs. Figure 1.2 identifies some of the inputs and outputs of a distance education system. You can probably think of others.

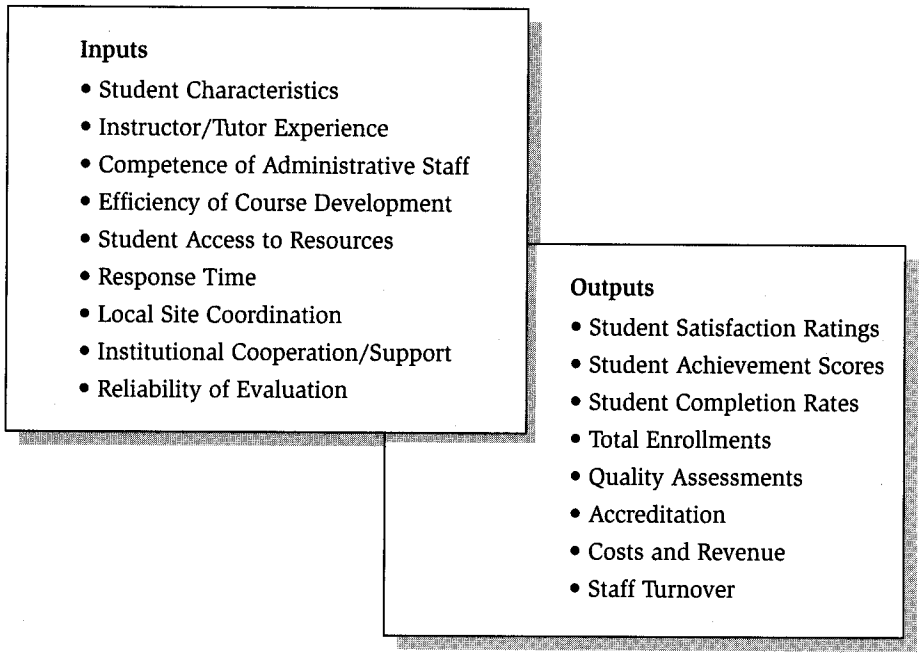
All the factors listed in the input column affect in some way the output variables we have listed. In some cases the relationship is quite direct, such as the case with instructor/tutor experience and student satisfaction ratings. Other relationships are less direct, such as the link between student access to resources and student achievement scores. Most relationships are multiple in nature; for example, student characteristics affect many of the output variables, whereas student completion rates are a function of many of the input factors. Indeed, with enough understanding of distance education, it is possible to identify a relationship between almost every input and output variable listed in Figure 1.2. The rest of this book is devoted to explaining these relationships in terms of the system components outlined in Figure 1.1.

## Different Levels of Distance Education and the Systems Approach

As we pointed out earlier, distance education courses can be offered by institutions with varying degrees of commitment and expertise. The systems approach is more likely to be found in distance learning institutions or consortia than in courses at the program or unit level. While an individual teacher or group in a unit can try to be systematic, following a total systems approach requires more resources and organization than these people have available. As a result, the best distance education courses are more likely to be implemented at the institutional or consortium level than the program or unit level.

Traditional institutions that try to offer distance learning courses typically face significant organizational conflicts, because a systems approach is not very compatible with traditional classroom instruction and the way such instruction

**Figure 1.2 Inputs and Outputs of Distance Education**




is planned and administered. Traditional schools, colleges, and universities have football fields and classrooms but do not typically have offices full of instructional designers and media specialists, large budgets for materials development and dissemination, and extensive networks of tutors and learning centers. Most faculty who wish to develop distance learning courses are often penalized in the promotion stakes because such work is not highly regarded by academic peers; they are also penalized in their workload, because they have to do for themselves what in a distance learning institution would be the work of a design team.

## Distance Education Is About Change

A major theme of this book is that the recognition now being given to distance education portends significant changes in education and how it is organized. To begin with, distance education means that students can have access to more and better learning resources than in the past. Rural and inner-city students can take courses previously available only to students in suburban areas. Handicapped and disabled students can have access to the same courses as everyone else—even if they are homebound or institutionalized. Adults who need

specialized training for career enhancement or basic skills can take courses without having to be away from home or their current jobs. Students in one country can learn from teachers and fellow students in others. Courses can be accessed whenever the student wants, at whatever pace is preferred, from almost any location. Overall, distance education opens up many new learning opportunities for many people.

While students will have more freedom and opportunity, they must also assume more responsibility for managing their own learning, in terms of when they will study, how much they want to learn, and seeking out information and resources. Some students may be unwilling or inadequately trained to accept this responsibility and will need help in making the necessary adjustments in their study habits.

The roles of instructors and administrators will be different in distance education systems in the future compared to traditional classroom instruction. In moving to a distance education system, some instructors will have the job of preparing materials without being involved in interaction with students, or if they do, they will have to use the communications technologies and learn to teach quite differently. Some instructors may be very reluctant to give up their physical contact with students or teach via media transmitted through technology. Of course good management will find appropriate positions for those teachers who want to be content specialists, those who prepare to provide interactive support to students, and those who are good at designing and producing mediated communications.

Administrators too will perform different and new duties. Instead of worrying about classroom availability and class scheduling, they will be concerned with ensuring that the various resources are brought together for the design and delivery of courses as well as student support. They have to develop new admissions procedures and find alternatives to "residency" as criteria of excellence. Some administrators may have difficulty understanding the shift in resources and procedures involved.

Distance education also implies major changes within schools and training organizations. With traditional classroom instruction, the student body is primarily defined by geography, with most students in schools and colleges tending to come from the local area. However, with distance education it becomes possible for schools and training to reach students anywhere in the country or the world. So, in theory, every school or training group offering similar instruction will compete with each other. This is by no means a bad thing. A key idea in distance education is the principle of comparative advantage. As applied here this means that each school, university, or training group should decide what subjects it has an advantage in, compared to competing organizations, and should specialize in providing instruction in that subject. The future educational system will have no geographic boundary, but each organization will be more focused and specialized in the range of subjects it offers. This will also mean that all educational providers will need to rethink their marketing strategies.

Without having to worry about designing the content or presenting it, teachers in a distance education system can concentrate their energies on facilitating learning.

As a result of these changes, the quality of distance education will continue to rise. The higher quality will be recognizable. Distance education courses are more open to public scrutiny than traditional classroom instruction because they are delivered by mediated programs that can be accessed easily. This leads to a new emphasis on quality and accountability for educational offerings and to distance education becoming increasingly competitive with conventional education.

## Summary

This chapter has introduced some basic ideas about distance education and proposed that a systems model is essential to both the understanding and the practice of distance education. The main points are

- A distance education institution, unit, program, consortium, or an individual course can be analyzed or described as a system. A system includes the subsystems of knowledge sources, design, delivery, interaction, learning, and management. The more integrated these are in practice, the greater will be the effectiveness of the distance education organization.

- As organizations become more understanding about the benefits of adopting a total systems approach to distance education, there will be impact on teachers, learners, administrators, and policymakers and significant changes in the way that education is conceptualized, funded, designed, and delivered. Not least will be opening of access and improvements in quality.

For further discussion about a systems approach to education, see Banathy (1993) or Reigeluth and Garfinkle (1994).