

Distance Education: Definition and Glossary of Terms

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Preface

Distance Education has become a major topic of interest in the field of educational communications and technology. Since a variety of definitions for distance education have been offered, it was considered important that a standard definition be established. The Definitions and Terminology Committee of The Association for Educational Communications and Technology (AECT), chaired by Al Januszewski, was asked to define Distance Education and provide a glossary of related terms.

This monograph is designed as a companion to “*Instructional Technology: The Definition and Domains of the Field*” by Barbara Seels and Rita Richey that was also sponsored by the Definitions and Terminology Committee of AECT. The definition offered in this monograph was based on background work published in “*Teaching and Learning at a Distance: Foundations of Distance Education, 2nd Ed.*” (2003). Glossary terms were compiled by Lee Ayers Schlosser of Southern Oregon University and the Appendix was prepared by Al Stiles of the Simulation, Training and Research Center. Special thanks to Mary Herring of the University of Northern Iowa and Cynthia Elliott of Fort Hays State University.

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Defining Distance Education

Distance education is defined as:

institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors.

There are four main components to this definition. First is the concept that distance education is institutionally based. This is what differentiates distance education from self-study. While the institution referred to in this definition could be a traditional educational school or college, increasingly there are emerging non-traditional institutions that offer education to students at a distance. Businesses, companies, and corporations are offering instruction at a distance. Many educators and trainers are advocating the accreditation of institutions that offer distance education to add credibility, improve quality, and eliminate diploma mills.

The second component of the definition of distance education is the concept of separation of the teacher and student. Most often, separation is thought of in geographic terms - teachers are in one location and students in another. Also implied by the definition is the separation of teachers and students in time. Asynchronous distance education means that instruction is offered and students access it at separate times, or any time it is convenient to them. Finally, intellectual separation of teachers and learners is important. Obviously, teachers have an understanding of the concepts presented in a course that students may not possess. In this case the reduction of separation is a goal of the distance education system.

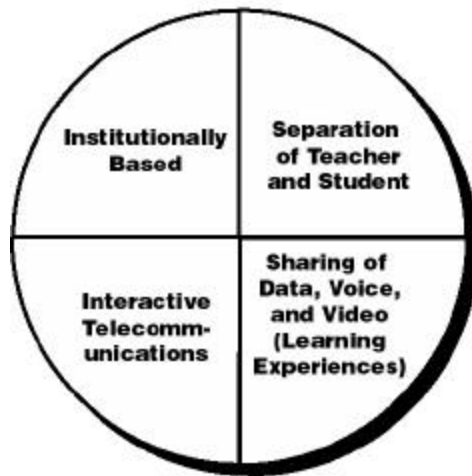
Interactive telecommunications is the third component of the definition of distance education. Interaction can be synchronous or asynchronous - at the same time, or at different times. Interaction is critical, but not at the expense of content. In other words, it is important that learners be able to interact with each other, with resources of instruction, and with their teacher. However, interaction should not be the primary characteristic of instruction, but should be available, commonplace and relevant.

The words "telecommunications systems" implies electronic media, such as television, telephone, and the Internet, but need not be limited to only electronic media. Telecommunications is defined as "communicating at a distance." This definition includes communication with the postal system, as in correspondence study, and other non-electronic methods for communication. Obviously, as electronic telecommunications systems improve and become more pervasive it is likely that they will be the mainstay of modern distance education systems. However, older, less sophisticated systems of telecommunication will continue to be important.

Finally, is the concept of connecting learners, resources and instructors. This means that there are instructors that interact with learners and that resources are available that permit learning to occur. Resources should be subjected to instructional design procedures that organize them into learning experiences that promote learning, including resources that can be observed, felt, heard, or completed.

The definition of distance education includes these four components. If one or more are missing then the event is something different, if only slightly, than distance education. It is also important to recognize that distance education includes both distance teaching and distance learning. The development, design, management and evaluation of instruction (Seels and Richey, 1994) fall under the heading of distance teaching. Utilization of learning experiences is distance learning. According to the definition of distance education, distance learning is not possible without distance teaching.

DISTANCE EDUCATION



This definition is not the only one and certainly is not the first offered for distance education. As a matter of fact, distance education has been defined from a number of perspectives over the years. For example, Rudolf Manfred Delling said,

Distance education is a planned and systematic activity which comprises the choice, didactic preparation and presentation of teaching materials as well as the supervision and support of student learning and which is achieved by bridging the physical distance between student and teacher by means of at least one appropriate technical medium.

For Hilary Perraton (1988), distance education is an educational process in which someone removed in space and/or time from the learner conducts a significant proportion of the teaching.

The U.S. Department of Education's Office of Educational Research and Improvement defines distance education as "the application of telecommunications and electronic devices which enable students and learners to receive instruction that originates from some distant location." Typically, the learner may interact with the instructor or program directly, and may meet with the instructor on a periodic basis.

Grenville Rumble (1989) offered the following four-part definition of distance education:

In any distance education process there must be: a teacher; one or more students; a course or curriculum that the teacher is capable of teaching and the student is trying to learn; and a contract, implicit or explicit, between the student and the teacher or the institution employing the teacher, which acknowledges their respective teaching-learning roles.

Distance education is a method of education in which the learner is physically separate from the teacher. It may be used on its own, or in conjunction with other forms of education, including face-to-face.

In distance education learners are physically separated from the institution that sponsors the instruction. The teaching/learning contract requires that the student be taught, assessed, given guidance and, where appropriate, prepared for examinations that may or may not be conducted by the institution. This must be accomplished by two-way communication. Learning may be undertaken individually or in groups; in either case it is accomplished in the physical absence of the teacher.

For Desmond Keegan (1986), the following four definitions were central to an attempt to identify the elements of a single, unifying definition of distance education:

1. The French government, as part of a law passed in 1971, defined distance education as education which either does not imply the physical presence of the teacher appointed to dispense it in the place where it is received or in which the teacher is present only on occasion or for selected tasks.
2. According to Börje Holmberg, distance education covers the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises but which, nevertheless, benefit from the planning, guidance and teaching of a supporting organization.
3. Otto Peters emphasized the role of technology, saying that distance teaching/education (Fernunterricht) is a method of imparting knowledge, skills and attitudes which is rationalized by the application of division of labor and organizational principles as well as by the extensive use of technical media, especially for the purpose of reproducing high quality teaching material which makes it possible to instruct great numbers of students at the same time wherever they live. It is an industrialized form of teaching and learning.
4. For Michael Moore, the related concept of “distance teaching” was defined as the family of instructional methods in which the teaching behaviors are executed apart from the learning behaviors, including those that in a contiguous situation would be performed in the learner’s presence, so that communication between the teacher and the learner must be facilitated by print, electronic, mechanical or other devices.

Keegan identified five main elements of these definitions, using them to compose a comprehensive definition of distance education:

1. The quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education).
2. The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes it from private study and teach-yourself programs).
3. The use of technical media—print, audio, video or computer—to unite teacher and learner and carry the content of the course.
4. The provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education).
5. The quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes.

Garrison and Shale (1987) argued that, in light of advances in distance education delivery technologies, Keegan’s definition was too narrow and did not correspond to the existing reality as well as to future possibilities. While declining to offer a definition of distance education, Garrison and Shale offered the following three criteria they regarded as essential for characterizing the distance education process:

1. Distance education implies that the majority of educational communication between (among) teacher and student(s) occurs noncontiguously.
2. Distance education must involve two-way communication between (among) teacher and student(s) for the purpose of facilitating and supporting the educational process.
3. Distance education uses technology to mediate the necessary two-way communication.

Keegan’s definition and the definitions preceding it define the traditional view of distance education. Rapid changes in society and technology are challenging these traditional definitions.

Emerging Definitions

The contemporary period is often characterized as one of unpredictable change. Globalization, brought on by supersonic air travel, satellite television, computer communications, and societal changes, has inspired new ways of looking at distance education. Edwards (1995) uses the term *open learning* to describe a new way of looking at education in a quickly changing and diverse world. He indicates that distance education and open learning are two distinct approaches to education. While he does not define the two, he states that distance education provides distance learning opportunities using mass-produced courseware to a mass market.

In contrast, open learning places greater emphasis on the current specific needs and/or markets available by recognizing local requirements and differences instead of delivering an established curriculum. Open learning shifts from mass production and mass consumption to a focus on local and individual needs and requirements. Edwards states that this can occur outside of the traditional organization of education. This is a major difference between his description of open learning and the previous definitions of distance education.

A Brief History of Distance Education

Distance education seems a new idea to most educators of today. However, the concepts that form the basis of distance education are more than a century old. Certainly, there has been a growth and change in distance education recently, but it is the long traditions of the field that continue to give it direction for the future. This section offers a brief history of distance education, from correspondence study, to electronic communications, to distance teaching universities.

Correspondence Study

The roots of distance education are at least 160 years old. An advertisement in a Swedish newspaper in 1833 touted the opportunity to study "Composition through the medium of the Post." In 1840, England's newly established penny post allowed Isaac Pitman to offer shorthand instruction via correspondence. Three years later, instruction was formalized with the founding of the Phonographic Correspondence Society, precursor of Sir Isaac Pitman's Correspondence Colleges.

Distance education, in the form of correspondence study, was established in Germany by Charles Toussaint and Gustav Langenscheidt, who taught language in Berlin. Correspondence study crossed the Atlantic in 1873 when Anna Eliot Ticknor founded a Boston-based society to encourage study at home. The Society to Encourage Studies at Home attracted more than 10,000 students in 24 years. Students of the classical curriculum (mostly women) corresponded monthly with teachers, who offered guided readings and frequent tests.

From 1883 to 1891, academic degrees were authorized by the state of New York through the Chautauqua College of Liberal Arts to students who completed the required summer institutes and correspondence courses. William Rainey Harper, the Yale professor who headed the program, was effusive in his support of correspondence study, and confident in the future viability of the new educational form:

The student who has prepared a certain number of lessons in the correspondence school knows more of the subject treated in those lessons, and knows it better, than the student who has covered the same ground in the classroom.

The day is coming when the work done by correspondence will be greater in amount than that done in the classrooms of our academies and colleges; when the students who shall recite by correspondence will far outnumber those who make oral recitations.

In 1891, Thomas J. Foster, editor of the *Mining Herald*, a daily newspaper in eastern Pennsylvania, began offering a correspondence course in mining and the prevention of mine accidents. His business developed into the International Correspondence Schools, a commercial school whose enrollment exploded in the first two decades of the 20th century, from 225,000 in 1900 to more than 2 million in 1920.

In 1886, H. S. Hermod, of Sweden, began teaching English by correspondence. In 1898 he founded Hermod's, which would become one of the world's largest and most influential distance teaching organizations.

Correspondence study continued to develop in Britain with the founding of a number of correspondence institutions, such as Skerry's College in Edinburgh in 1878 and University Correspondence College in London in 1887. At the same time, the university extension movement in the United States and England promoted the correspondence method. Among the pioneers in the field were Illinois Wesleyan in 1877 and the University Extension Department of the University of Chicago in 1892.

Illinois Wesleyan offered bachelor's, master's, and doctoral degrees as part of a program modeled on the Oxford, Cambridge, and London model. Between 1881 and 1890, 750 students were enrolled; and in 1900, nearly 500 students

were seeking degrees. However, concerns about the quality of the program prompted a recommendation that it be terminated by 1906.

Correspondence study was integral to the University of Chicago. The school, founded in 1890, created a university extension as one of its five divisions, the first such division in an American university. The extension division was divided into five departments: lecture study, class study, correspondence teaching, library, and training.

The correspondence study department of the University of Chicago was successful, at least in terms of numbers. Each year, 125 instructors taught 3,000 students enrolled in 350 courses. Nevertheless, enthusiasm within the university for the program waned, partly for financial reasons.

At the University of Wisconsin, the development of the “short course” and farmers’ institutes in 1885 formed the foundation for university extension. Six years later, the university announced a program of correspondence study led by the eminent historian, Frederick Jackson Turner. However, as at the University of Chicago, faculty interest waned. Further, public response was minimal, and the correspondence study program was discontinued in 1899. Correspondence study would have to wait another seven years to be reborn under a new, stronger, correspondence study department within the school’s university extension division.

Moody Bible Institute, founded in 1886 formed a correspondence department in 1901 that continues today with a record of over one million enrollments from all over the world. Correspondence study/distance education has had a significant impact on religious education that emphasizes the social context within which a student lives.

Distance education began to enrich the secondary school curriculum in the 1920s. Students in Benton Harbor, Michigan, were offered vocational courses in 1923, and six years later, the University of Nebraska began experimenting with correspondence courses in high schools.

In France, the Ministry of Education set up a government correspondence college in response to the impending Second World War. Although the Centre National d’Enseignement par Correspondances was established for the education of children, it has since become a huge distance teaching organization for adult education.

The original target groups of distance education efforts were adults with occupational, social, and family commitments. This remains the primary target group today. Distance education provided the opportunity to widen intellectual horizons, as well as the chance to improve and update professional knowledge. Further, it stressed individuality of learning and flexibility in both the time and place of study.

Two philosophies of distance education became identifiable. The full liberalism of programs offered by Hermod’s, in Sweden, emphasized the free pacing of progress through the program by the student. Other programs, such as those offered by the University of Chicago, offered a more rigid schedule of weekly lessons.

Electronic Communications

In Europe, there was a steady expansion of distance education, without radical changes in structure, but with gradually more sophisticated methods and media employed. Audio recordings were used in instruction for the blind and in language teaching for all students. Laboratory kits were used in such subjects as electronics and radio engineering. Virtually all large-scale distance teaching organizations were private correspondence schools.

In the United States, advances in electronic communications technology helped determine the dominant medium of distance education. In the 1920s, at least 176 radio stations were constructed at educational institutions, although most were gone by the end of the decade. The surviving stations were mostly at land grant colleges.

In the early 1930s, experimental television teaching programs were produced at the University of Iowa, Purdue University, and Kansas State College. However, it was not until the 1950s that college credit courses were offered via broadcast television: Western Reserve University was the first to offer a continuous series of such courses, beginning in 1951. Sunrise Semester was a well-known televised series of college courses offered by New York University on CBS from 1957 to 1982.

Satellite technology, developed in the 1960s and made cost-effective in the 1980s, enabled the rapid spread of instructional television. Federally funded experiments in the United States and Canada, such as the Appalachian Education Satellite Project (1974–1975), demonstrated the feasibility of satellite-delivered instruction. However, these early experiments were loudly criticized for being poorly planned. More recent attempts at satellite-delivered distance education have been more successful. The first state educational satellite system, Learn/Alaska, was created in 1980. It offered six hours of instructional television daily to 100 villages, some of them accessible only by air. The privately operated TI-IN Network, of San Antonio, Texas, has delivered a wide variety of courses via satellite to high schools across the United States since 1985.

In the late 1980s and early 1990s the development of fiber-optic communication systems allowed for the expansion of live, two-way, high-quality audio and video systems in education. While the initial cost of fiber-optic systems may be high, the long-term savings and benefits of the technology outweigh the initial costs. Many now consider fiber-optic delivery systems as the least expensive option for the high quality, two-way audio and video required for live two-way interactive distance education. The state of Iowa has the largest statewide fiber-optic system. Currently the Iowa Communications Network (ICN) provides full-motion, two-way interactive video, data (Internet), and voice services to over 800 Iowa classrooms. In the near future, all school districts, area education agencies, and public libraries in Iowa will have classrooms connected to the fiber optics of the ICN. The ICN also serves as the backbone for computer telecommunications, and asynchronous, Internet-based programs are being offered to distant learners. Over 100,000 hours of formal educational opportunities were offered during the first 18 months of the network's service. Recently, 100,000 hours were being offered every month.

Distance education opportunities are quickly growing through the use of computer-mediated communications. Tens of thousands of networks are connected to the Internet, with millions of people using the Internet worldwide (Ackermann, 1995). Both credit and noncredit courses have been offered over computer networks since the mid-1980s. In most cases, a teacher organizes the course materials, readings, and assignments. The students read the material, complete assignments, and participate in on-line discussions with other classmates. The advent of computer conferencing capabilities has had an impact on the traditional approach to the design of distance education instruction. Computer conferencing increases the potential for interaction and collaborative work among the students. This type of collaboration among students was difficult with previous forms of distance education.

In addition, computer networks are a convenient way to distribute course materials to students around the world. Many faculty members now use the convenient user interface of the World Wide Web to make course materials available to their students. The British Open University, Fern Universität of Germany, and the University of Twente in the Netherlands are some of the leading providers of on-line courses in Europe. In the United States, the American Open University, Nova Southeastern University, and the University of Phoenix have been traditional leaders in providing distance education. They, along with many other universities, are now offering hundreds of courses on-line.

Distance Teaching Universities

The 1962 decision that the University of South Africa would become a distance teaching university brought about a fundamental change in the way distance education was practiced in much of the world. Another landmark was the founding, in 1971, of the Open University of the United Kingdom, a degree-giving distance teaching university offering full degree programs, sophisticated courses, and the innovative use of media (Holmberg, 1986). The Open University brought heightened prestige to distance education, and spurred the establishment of similar institutions in industrial nations such as West Germany, Japan, and Canada, as well as in such lesser-developed nations as Sri Lanka and Pakistan.

While the distance teaching universities shared numerous similarities, they were not identical in their mission or practice. Two of the largest and most influential, the Open University of the United Kingdom and the German Fern Universität, differ widely. The British school favors employed, part-time students of above normal study age, and allows them to enroll without formal entrance qualifications. By 1984, some 69,000 of its students had completed work for the Bachelor of Arts degree.

The German Fern Universität, founded in 1975, offers a more rigorous program than its British counterpart. Despite strict, formal entrance requirements, it had 28,000 students in 1985. However, the dropout rate is very high, and in its first decade, only 500 students completed the full curricula for a university degree.

Holmberg (1986) offers numerous political, economic, and educational reasons for the founding of distance teaching universities, including:

- The need felt in many countries to increase the offerings of university education generally
- A realization that adults with jobs, family responsibilities, and social commitments form a large group of prospective part-time university students
- A wish to serve both individuals and society by offering study opportunities to adults, among them disadvantaged groups
- The need found in many professions for further training at an advanced level
- A wish to support educational innovation
- A belief in the feasibility of an economical use of educational resources by mediated teaching

Theory and Distance Education

Most students, and many teachers, cringe at the thought of a discussion of theory. This need not be the case. This section is designed not to intimidate or to bore, but to inform. Theory is important to the study of distance education because it has a direct impact on the practice of the field.

Traditionally, theories of distance education have come from sources external to America. Recently, the field in the United States has matured to the point where indigenous definitions and theories have begun to emerge.

The Need for Theory

Although forms of distance education have been in existence since the 1840s and attempts at theoretical explanations of distance education had been undertaken by leading scholars in the field, the need for a theory base of distance education was still largely unfulfilled in the 1970s. Holmberg (1986) stated that further theoretical considerations would contribute results that will give distance educators a firmly based theory, a touchstone against which decisions can be made with confidence. In 1988, Holmberg continued to recognize the need for theoretical considerations:

One consequence of such understanding and explanation will be that hypotheses can be developed and submitted to falsification attempts. This will lead to insights telling us what in distance education is to be expected under what conditions and circumstances, thus paving the way for corroborated practical methodological application. (p. 3)

Moore (1994) was concerned that the progress of distance education would be hindered by the lack of attention to what he called the “macro factors.” He indicated that in this area of education there was a need to describe and define the field, to discriminate between the various components of the field, and to identify the critical elements of the various forms of learning and teaching.

Keegan (1988) implied the continued need for a theory of distance education when he lamented the lack of it:

Lack of accepted theory has weakened distance education: there has been a lack of identity, a sense of belonging to the periphery and the lack of a touchstone against which decisions on methods, on media, on financing, on student support, when they have to be made, can be made with confidence. (p. 63)

More recently, Keegan stated his ideas about what the theory should encompass: According to Keegan, a firmly based theory of distance education will be one which can provide the touchstone against which decisions—political, financial, educational, social—when they have to be taken, can be taken with confidence. This would replace the ad hoc response to a set of conditions that arises in some “crisis” situation of problem solving, which normally characterizes this field of education.

In a general sense, theory is taken to mean a set of hypotheses logically related to one another in explaining and predicting occurrences. Holmberg (1985) stated that

the aim of the theoretician is to find explanatory theories; that is to say, the theories that describe certain structural properties of the world, and which permit us to deduce, with the help of initial conditions, the effects to be explained. . . . Theoretical, to bring explanation, on the other hand practical, to provide for application or technology. (p. 5)

Keegan added (1995):

A theory is something that eventually can be reduced to a phrase, a sentence or a paragraph and which, while subsuming all the practical research, gives the foundation on which the structures of need, purpose and administration can be erected. (p. 20)

In 1995 Holmberg gave a more specific definition of the concept of theory. He stated that a theory means a systematic ordering of ideas about the phenomenon of our field of inquiry and an overarching logical structure of reasoned suppositions which can generate intersubjectively testable hypotheses. (p. 4)

Holmberg suggested that distance education has been characterized by a trial and error approach with little consideration being given to a theoretical basis for decision-making. He suggested that the theoretical underpinnings of distance education are fragile. Most efforts in this field have been practical or mechanical and have concentrated on the logistics of the enterprise.

To some, distance education represents a deviation from conventional education. Holmberg claimed it was a distinct form of education. Keegan (1986) concluded that distance education is a distinct field of education, parallel to and a complement of conventional education. Shale (1988) countered that all of what constitutes the process of education when teacher and student are able to meet face-to-face also constitutes the process of education when the teacher and student are physically separated.

Cropley and Kahl (1983) compared and contrasted distance education and face-to-face education in terms of psychological dimensions and claimed neither set of principles emerged in a pure form. Peters (1988) strongly stated:

Anyone professionally involved in education is compelled to presume the existence of two forms of instruction which are strictly separable: traditional face-to-face teaching based on interpersonal communication and industrialized teaching, which is based on objectivized, rationalized technologically-produced interaction. (p. 20)

In his landmark work, *The Foundations of Distance Education*, Keegan (1986) classified theories of distance education into three groups:

- Theories of independence and autonomy
- Theories of industrialization of teaching
- Theories of interaction and communication

A fourth category seeks an explanation of distance education in a synthesis of existing theories of communication and diffusion, as well as philosophies of education.

Theory of Independent Study—Charles Wedemeyer

For Wedemeyer, the essence of distance education was the independence of the student. This was reflected in his preference for the term *independent study* for distance education at the college or university level. Wedemeyer was critical of contemporary patterns of higher education. He believed that outdated concepts of learning and teaching were being employed, and that they failed to utilize modern technologies in ways that could alter the institution.

Wedemeyer set forth a system with 10 characteristics emphasizing learner independence and adoption of technology as a way to implement that independence. According to Wedemeyer, the system should:

1. Be capable of operation any place where there are students—or even only one student—whether or not there are teachers at the same place at the same time
2. Place greater responsibility for learning on the student
3. Free faculty members from custodial-type duties so that more time can be given to truly educational tasks
4. Offer students and adults wider choices (more opportunities) in courses, formats, and methodologies
5. Use, as appropriate, all the teaching media and methods that have been proved effective
6. Mix media and methods so that each subject or unit within a subject is taught in the best way known
7. Cause the redesign and development of courses to fit into an “articulated media program”
8. Preserve and enhance opportunities for adaptation to individual differences
9. Evaluate student achievement simply, not by raising barriers concerned with the place, rate, method, or sequence of student study
10. Permit students to start, stop, and learn at their own pace

Wedemeyer proposed the separation of teaching from learning as a way of breaking education’s “space-time barriers.” He suggested six characteristics of independent study systems:

1. The student and teacher are separated.
2. The normal processes of teaching and learning are carried out in writing or through some other medium.
3. Teaching is individualized.
4. Learning takes place through the student's activity.
5. Learning is made convenient for the student in his or her own environment.
6. The learner takes responsibility for the pace of his or her own progress, with freedom to start and stop at any time.

Wedemeyer noted four elements of every teaching-learning situation: a teacher, a learner or learners, a communications system or mode, and something to be taught or learned. He proposed a reorganization of these elements that would accommodate physical space and allow greater learner freedom. Key to the success of distance education, Wedemeyer believed, was the development of the relationship between student and teacher.

Theory of Independent Study—Michael Moore

Formulated in the early 1970s, Moore's theory of distance education, which he calls "independent study," is a classification method for distance education programs. Shaped in part by Moore's adult education and university extension experience, it examines two variables in educational programs: the amount of learner autonomy and the distance between teacher and learner.

For Moore, distance is composed of two elements, each of which can be measured. First is the provision for two-way communication (dialog). Some systems or programs offer greater amounts of two-way communication than others. Second is the extent to which a program is responsive to the needs of the individual learner (structure). Some programs are very structured, while others are very responsive to the needs and goals of the individual student.

In the second part of his theory, Moore addresses learner autonomy. He notes that in traditional school settings learners are very dependent on teachers for guidance, and that in most programs, conventional and distance, the teacher is active, while the student is passive.

In distance education, there is a gap between teacher and student, so the student must accept a high degree of responsibility for the conduct of the learning program. The autonomous learner needs little help from the teacher, who may be more of a respondent than a director. Some adult learners, however, require help in formulating their learning objectives and in identifying sources of information and in measuring objectives.

Moore classifies distance education programs as "autonomous" (learner-determined) or "nonautonomous" (teacher-determined), and gauges the degree of autonomy accorded the learner by answers to the following three questions:

1. Is the selection of learning objectives in the program the responsibility of the learner or of the teacher (autonomy in setting of objectives)?
2. Is the selection and use of resource persons, of bodies and other media, the decision of the teacher or the learner (autonomy in methods of study)?
3. Are the decisions about the method of evaluation and criteria to be used made by the learner or the teacher (autonomy in evaluation)?

Theory of Industrialization of Teaching—Otto Peters

In a major treatise on education, Otto Peters of Germany developed a view of distance education as an industrialized form of teaching and learning. He examined a research base that included an extensive analysis of the distance teaching organizations of the 1960s. This led him to propose that distance education could be analyzed by comparing it with the industrial production of goods. He stated that from many points of view conventional, oral, group-based education was a preindustrial form of education. His statement implied that distance teaching could not have existed before the industrial era. Using economic and industrial theory, Peters proposed the following new categories (terminology) for the analysis of distance education.

Rationalization. The use of methodical measures to reduce the required amount of input of power, time, and money. In distance education, ways of thinking, attitudes, and procedures can be found which only established themselves in the wake of an increased rationalization in the industrialization of production processes.

Division of labor. The division of a task into simpler components or subtasks. In distance education, separate individuals perform the tasks of conveying information, counseling, assessment, and recording performance. To Peters, the division of labor is the main prerequisite for the advantages of distance education to become effective.

Mechanization. The use of machines in a work process. Distance education, Peters noted, would be impossible without machines. Duplicating machines and transport systems are prerequisites, and later forms of distance teaching have the additional facilities of modern means of communication and electronic data processing installations.

Assembly line. Commonly, a method of work in which workers remain stationary, while objects they are working on move past them. In traditional distance education programs, materials for both teacher and student are not the product of an individual. Rather, instructional materials are designed, printed, stored, distributed, and graded by specialists.

Mass production. The production of goods in large quantities. Peters noted that because demand outstrips supply at colleges and universities, there has been a trend toward large-scale operations not entirely consistent with traditional forms of academic teaching. Mass production of distance education courses, however, can enhance quality. Peters believed that the large number of courses produced forced distance teaching organizations to analyze the requirements of potential distance learners far more carefully than in conventional teaching and to improve the quality of the courses.

Preparatory work. Determining how workers, machines, and materials can usefully relate to each other during each phase of the production process. Peters believed that the success of distance education depended decisively on a preparatory phase. The preparatory phase concerns the development of the distance study course involving experts in the various specialist fields with qualifications often higher than those of other teachers involved in distance study.

Planning. The system of decisions that determines an operation prior to it being carried out. Peters noted that planning was important in the development phase of distance education, as the contents of correspondence units, from the first to the last, must be determined in detail, adjusted in relation to each other, and represented in a predetermined number of correspondence units. The importance of planning is even greater when residential study is a component of a distance education program.

Organization. Creating general or permanent arrangements for purpose-oriented activity. Peters noted the relationship between rational organization and effectiveness of the teaching method. Organization makes it possible for students to receive exactly predetermined documents at appointed times, for an appropriate university teacher to be immediately available for each assignment sent in, and for consultations to take place at fixed locations at fixed times. Organization, Peters pointed out, was optimized in large distance education programs.

Scientific control methods. The methods by which work processes are analyzed systematically, particularly by time studies, and in accordance with the results obtained from measurements and empirical data. The work processes are tested and controlled in their elementary details in a planned way, in order to increase productivity, all the time making the best possible use of working time and the staff available. In distance education, some institutions hire experts to apply techniques of scientific analysis to the evaluation of courses.

Formalization. The predetermination of the phases of the manufacturing process. In distance education, all the points in the cycle, from student, to distance teaching establishment, to the academics allocated, must be determined exactly.

Standardization. The limitations of manufacture to a restricted number of types of one product, in order to make these more suitable for their purpose, cheaper to produce, and easier to replace. In distance education, not only is the format of correspondence units standardized, so are the stationery for written communication between student and lecturer, the organizational support, and also the academic content.

Change of function. The change of the role or job of the worker in the production process. In distance education, change of function is evident in the role of the lecturer. The original role of provider of knowledge in the form of the lecturer is split into that of study unit author and that of marker; the role of counselor is allocated to a particular person or position. Frequently, the original role of lecturer is reduced to that of a consultant whose involvement in distance teaching manifests itself in periodically recurrent contributions.

Objectification. The loss, in the production process, of the subjective element that was used to determine work to a considerable degree. In distance education, most teaching functions are objectified as they are determined by the distance study course as well as technical means. Only in written communication with the distance learner or possibly in a consultation or the brief additional face-to-face events on campus has the teacher some individual scope left for subjectively determined variants in teaching method.

Concentration and centralization. Because of the large amounts of capital required for mass production and the division of labor, there has been a trend to large industrial concerns with a concentration of capital, a centralized administration, and a market that is monopolized. Peters noted the trend toward distance education institutions serving very large numbers of students. The Open University of the United Kingdom, for instance, recently had more

than 70,000 students. It is more economical to establish a small number of such institutions serving a national population, rather than a larger number of institutions serving regional populations.

Peters concluded that for distance teaching to become effective, the principle of the division of labor is a constituent element of distance teaching. The teaching process in his theory of industrialization is gradually restructured through increasing mechanization and automation. He stated that:

- The development of distance study courses is just as important as the preparatory work-taking place prior to the production process.
- The effectiveness of the teaching process is particularly dependent on planning and organization.
- Courses must be formalized and expectations from students standardized.
- The teaching process is largely objectified.
- The function of academics teaching at a distance has changed considerably vis -à-vis university teachers in conventional teaching.
- Distance study can only be economical with a concentration of the available resources and a centralized administration.

According to Peters, within the complex overall distance teaching activity one area has been exposed to investigation that had been regularly omitted from traditional analysis. New concepts were used to describe new facts that merit attention. He did not deny there were disadvantages to a theory of the industrialization of teaching; but in any exploration of teaching, the industrial structures characteristic of distance teaching need to be taken into account in decision-making.

Theory of Interaction and Communication—Börje Holmberg

Holmberg's theory of distance education, what he calls guided didactic conversation, falls into the general category of communication theory. Holmberg noted that his theory had explanatory value in relating teaching effectiveness to the impact of feelings of belonging and cooperation as well as to the actual exchange of questions, answers, and arguments in mediated communication.

Holmberg offers seven background assumptions for his theory:

1. The core of teaching is interaction between the teaching and learning parties; it is assumed that simulated interaction through subject matter presentation in preproduced courses can take over part of the interaction by causing students to consider different views, approaches, and solutions and generally interact with a course.
2. Emotional involvement in the study and feelings of personal relation between the teaching and learning parties are likely to contribute to learning pleasure.
3. Learning pleasure supports student motivation.
4. Participation in decision-making concerning the study is favorable to student motivation.
5. Strong student motivation facilitates learning.
6. A friendly, personal tone and easy access to the subject matter contribute to learning pleasure, support student motivation, and thus facilitate learning from the presentations of preproduced courses, i.e., from teaching in the form of one-way traffic simulating interaction, as well as from didactic communication in the form of two-way traffic between the teaching and learning parties.
7. The effectiveness of teaching is demonstrated by students' learning of what has been taught.

These assumptions, Holmberg believes, are the basis of the essential teaching principles of distance education. From these assumptions he formed his theory:

Distance teaching will support student motivation, promote learning pleasure and make the study relevant to the individual learner and his/her needs, creating feelings of rapport between the learner and the distance-education institution (its tutors, counselors, etc.), facilitating access to course content, engaging the learner in activities, discussions and decisions and generally catering for helpful real and simulated communication to and from the learner.

Holmberg himself notes that this is admittedly a leaky theory. However, he adds, it is not devoid of explanatory power: it does, in fact, indicate essential characteristics of effective distance education.

In 1995 Holmberg significantly broadened his theory of distance education. This expanded theory encompasses the theory just stated above, and stated that:

1. Distance education serves individual learners who cannot or do not want to make use of face-to-face teaching. These learners are very heterogeneous.
2. Distance education means learners no longer have to be bound by decisions made by others about place of study, division of the year into study terms and vacations, timetables, and entry requirements.
3. Distance education thus promotes students' freedom of choice and independence.
4. Society benefits from distance education, on the one hand, from the liberal study opportunities it affords individual learners, and, on the other hand, from the professional/occupational training it provides.
5. Distance education is an instrument for recurrent and lifelong learning and for free access to learning opportunities and equity.
6. All learning concerned with the acquisition of cognitive knowledge and cognitive skills as well as affective learning and some psychomotor learning are effectively provided for by distance education. Distance education may inspire metacognitive approaches.
7. Distance education is based on deep learning as an individual activity. Learning is guided and supported by noncontiguous means. Teaching and learning rely on mediated communication, usually based on preproduced courses.
8. Distance education is open to behaviorist, cognitive, constructivist, and other modes of learning. It has an element of industrialization with division of labor, use of mechanical devices, electronic data processing, and mass communication, usually based on preproduced courses.
9. Personal relations, study pleasure, and empathy between students and those supporting them (tutors, counselors, etc.) are central to learning in distance education. Feelings of empathy and belonging promote students' motivation to learn and influence the learning favorably. Such feelings are conveyed by students being engaged in decision-making; by lucid, problem-oriented conversation-like presentations of learning matter that may be anchored in existing knowledge; by friendly, noncontiguous interaction between students and tutors, counselors, and others supporting them; and by liberal organizational-administrative structures and processes.

While it is an effective mode of training, distance education runs the risk of leading to mere fact learning and reproduction of accepted "truths." However, it can be organized and carried out in such a way that students are encouraged to search, criticize, and identify positions of their own. It thus serves conceptual learning, problem learning, and genuinely academic ends.

In sum, the above represents, on the one hand, a description of distance education and, on the other hand, a theory from which hypotheses are generated and which has explanatory power in that it identifies a general approach favorable to learning and to the teaching efforts conducive to learning.

Andragogy - Malcolm Knowles

Most do now consider Knowles work to be a theory of distance education, it is relevant because most often adults are involved in distance education, and andragogy deals with frameworks for programs designed for the adult learner. At its core is the idea that "the attainment of adulthood is concomitant on adults' coming to perceive themselves as self-directing individuals" (Brookfield, 1986).

Knowles spent a career formulating a theory of adult learning based on research and experience related to the characteristics of the adult learner (Knowles, 1990). The andragogical process consists of seven elements.

1. The establishment of a climate conducive to adult learning, that includes a physical environment which is conducive to the physical well being of the adult learner, and a psychological environment that provides for a feeling of mutual respect, collaborativeness, trust, openness, and authenticity.
2. The creation of an organizational structure for participatory learning that includes planning groups where learners provide input about what is to be learned, and options regarding learning activities.
3. The diagnosis of needs for learning that includes differentiating between felt needs and ascribed needs.
4. The formulation of directions for learning that includes objectives with terminal behaviors to be achieved and directions for improvement of abilities.
5. The development of a design for activities that clarifies resources and strategies to accomplish objectives.
6. The development of a plan that provides evidence when objectives are accomplished.
7. The use of quantitative and qualitative evaluation that provides a rediagnosis of needs for learning.

Knowles andragogy suggests a number of characteristics needed in distance education systems designed for adults. For example:

- The physical environment of a television classroom used by adults should be able to see what is occurring, not just hear it.
- The physiological environment should be one that promotes respect and dignity for the adult learner.
- Adults learners must feel supported, and when criticism is a part of discussions or presentations made by adults it is important that clear ground rules be established so comments are not directed toward a person, but concentrate on content and ideas.
- A starting point for a course, or module of a course, should be the needs and interest of the adult learner.
- Course plans should include clear course descriptions, learning objectives, resources, and timelines for events.
- General to specific patterns of content presentation work best for adult learners.
- Active participation should be encouraged, such as by the use of work groups, or study teams.

A Synthesis of Existing Theories—Hilary Perraton

Perraton's theory of distance education is composed of elements from existing theories of communication and diffusion, as well as philosophies of education. It is expressed in the form of 14 statements, or hypotheses. The first five of these statements concern the way distance teaching can be used to maximize education:

1. You can use any medium to teach anything.
2. Distance teaching can break the integuments of fixed staffing ratios that limited the expansion of education when teacher and student had to be in the same place at the same time.
3. There are circumstances under which distance teaching can be cheaper than orthodox education, whether measured in terms of audience reached or of learning.
4. The economies achievable by distance education are functions of the level of education, size of audience, choice of media, and sophistication of production.
5. Distance teaching can reach audiences who would not be reached by ordinary means.

The following four statements address the need to increase dialog:

6. It is possible to organize distance teaching in such a way that there is dialog.
7. Where a tutor meets distance students face-to-face, the tutor's role is changed from that of a communicator of information to that of a facilitator of learning.
8. Group discussion is an effective method of learning when distance teaching is used to bring relevant information to the group.
9. In most communities there are resources that can be used to support distance learning to its educational and economic advantage.

The final five statements deal with method:

10. A multimedia program is likely to be more effective than one that relies on a single medium.
11. A systems approach is helpful in planning distance education.
12. Feedback is a necessary part of a distance learning system.
13. To be effective, distance-teaching materials should ensure that students undertake frequent and regular activities over and above reading, watching, or listening.
14. In choosing between media, the key decision on which the rest depend concerns the use of face-to-face learning.

Equivalency Theory—An Emerging American Theory of Distance Education

The impact of new technologies on distance education is far ranging. Desmond Keegan (1995) suggests that electronically linking instructor and students at various locations creates a virtual classroom. Keegan goes on to state that:

The theoretical analyses of virtual education, however, have not yet been addressed by the literature: Is it a subset of distance education or to be regarded as a separate field of educational endeavor? What are its didactic structures? What is the relationship of its cost effectiveness and of its educational effectiveness to distance education and to conventional education? (p. 21)

It is in this environment of virtual education that the equivalency theory of distance education has emerged. Some advocates of distance education have mistakenly tried to provide identical instructional situations for all students, no matter when or where they learn. Since it is more difficult to control the situations of distant learners, some have decided that all learners should participate as distant learners. This is based on the belief that learners should have identical opportunities to learn. This is a mistake. Simonson (1999) theorizes that for distance education to be successful in the United States its appropriate application should be based on the belief that:

the more equivalent the learning experiences of distant students are to that of local students, the more equivalent will be the outcomes of the learning experience.

In other words, each learner might use different instructional strategies, varying instructional resources, or individually prescribed activities. If the distance education course is effectively designed and equivalent experiences are available, then potentially learners will reach the course's instructional objectives.

Simonson (1996) in elaborating on this theory states:

It should not be necessary for any group of learners to compensate for different, possibly lesser, instructional experiences. Thus, those developing distance educational systems should strive to make equivalent the learning experiences of all students no matter how they are linked to the resources or instruction they require.

One key to this theoretical approach is the concept of equivalency. Local and distant learners have fundamentally different environments in which they learn. It is the responsibility of the distance educator to design learning events that provide experiences with equal value for learners. Just as a triangle and a square may have the same area and be considered equivalent even though they are quite different geometrical shapes, the experiences of the local learner and the distant learner should have equivalent value even though these experiences might be quite different.

Another key to this approach is the concept of the learning experience. A learning experience is anything that promotes learning, including what is observed, felt, heard, or done. It is likely that different students in various locations, learning at different times, with different backgrounds may require a different mix of learning experiences. Some will need a greater amount of observing, and others a larger dosage of doing. The goal of instructional planning is to make the sum of experiences for each learner equivalent. Instructional design procedures should attempt to anticipate and provide the collection of experiences that will be most suitable for each student or group of students.

This approach is supported by Shale (1988), who argued that distance education is not a distinct field of education. He states that the process of education when students and teacher are face-to-face is the same as when students and teachers are at a distance.

A Theoretical Framework for Distance Education—Desmond Keegan

Keegan (1986) suggested that the theoretician had to answer three questions before developing a theory of distance education:

- *Is distance education an educational activity?* Keegan's answer was that, while distance education institutions possess some of the characteristics of businesses, rather than of traditional schools, their educational activities are dominant. Distance education is a more industrialized form of education. The theoretical bases for distance education, Keegan pointed out, were within general education theory.
- *Is distance education a form of conventional education?* Keegan believed that, because distance education was not based on interpersonal communication and is characterized by a privatization of institutionalized learning (as is conventional education); it is a distinct form of education. Therefore, while the theoretical basis for distance education could be found within general education theory, it could not be found within the theoretical structures of oral, group-based education.

However, Keegan considered virtual systems based on teaching face-to-face at a distance a new cognate field of study to distance education. He believes that a theoretical analysis of virtual education still needs to be addressed.

- *Is distance education possible, or is it a contradiction in terms?* Keegan points out that if education requires intersubjectivity—a shared experience in which teacher and learner are united by a common zeal—then distance education is a contradiction in terms. Distance *instruction* is possible, but distance *education* is not.

Again, the advent of virtual systems used in distance education challenges the traditional answer to this question.

Central to Keegan's concept of distance education is the separation of the teaching acts in time and/or place from the learning acts. Successful distance education, he believes, requires the reintegration of the two acts of teaching and learning.

The intersubjectivity of teacher and learner, in which learning from teaching occurs, has to be artificially recreated. Over space and time, a distance system seeks to reconstruct the moment in which the teaching-learning interaction occurs. The linking of learning materials to learning is central to this process.

Reintegration of the act of teaching at a distance is attempted in two ways. First, learning materials, both print and nonprint, are designed to achieve as many of the characteristics of interpersonal communication as possible. Second, when courses are presented, reintegration of the teaching act is attempted by a variety of techniques, including communication by correspondence, telephone tutorial, on-line computer communication, comments on assignments by tutors or computers, and teleconferences.

The process of reintegrating the act of teaching in distance education, Keegan suggests, results in at least five changes to the normal structure of oral, group-based education:

1. The industrialization of teaching
2. The privatization of institutional learning
3. Change of administrative structure
4. Different plant and buildings
5. Change of costing structures

Keegan offers three hypotheses drawn from his theoretical framework:

1. Distance students have a tendency to drop out of those institutions in which structures for the reintegration of the teaching acts are not satisfactorily achieved.
2. Distance students have difficulty in achieving quality of learning in those institutions in which structures for the reintegration of the teaching acts are not satisfactorily achieved.
3. The status of learning at a distance may be questioned in those institutions in which the reintegration of the teaching acts is not satisfactorily achieved.

Summary

In the rapidly changing and diverse environment in which distance education is practiced, many questions remain unanswered. In this environment it is difficult to arrive at one definition or agree on a theory of how to practice and do research in the field of distance education. New technologies, globalization, and new ideas about student learning challenge the traditional approaches to the practice of distance education. This theme of change is evident in the discussions of distance education and its definition, history, status, and theory.

Numerous definitions of distance education have been proposed. Most include the separation of teacher and learner, the influence of an educational organization, the use of media to unite teacher and learner, the opportunity for two-way communication, and the practice of individualized instruction. The traditional definitions describe distance education as taking place at a different time and in a different place, while recent definitions, enabled by new interactive technologies, stress education that takes place at the same time but in a different place. The role of educational organizations in the distance education process has also been challenged. These issues will continue to be debated as distance educators seek definitions that fit a changing world.

Investigating the relatively brief history of distance education reveals both diversity and an ongoing change in its practice. Historically, diverse practices of distance education have been developed according to the resources and philosophies of the organizations providing instruction. The history also shows that advances in technology have promoted key changes in distance education. These changes have been most evident in the rapid development of electronic communications in recent decades. How the future of distance education will be shaped by the integration of its history and these new technologies is yet to be seen.

Changes in society, politics, economics, and technology are impacting the status of distance education around the world. In some cases, distance education is seen as an answer to inadequate educational opportunities caused by political and/or economic instability. In other situations, established distance education providers are being required by a changing society to convert from mass instruction to a more decentralized approach to meet the diverse needs of their students. In many countries, the need for continuing education or training and access to degree programs is accelerated by the demands of a changing society. Students in rural or isolated parts of the world look to distance education for opportunities to “keep up” with the outside world. Again, technology advances are a major influence for change in distance education worldwide. The globalization of the world enabled by these new technologies will challenge distance educators to rethink the practice of distance education to take advantage of these new opportunities.

The changing and diverse environment in which distance education is practiced has inhibited the development of a single theory upon which to base practice and research. A variety of theories have been proposed to describe traditional distance education. They include theories that emphasize independence and autonomy of the learner, industrialization of teaching, and interaction and communication. These traditional theories emphasize that distance education is a fundamentally different form of education. Recent emerging theories based on the capabilities of new interactive audio and video systems, state that distance education is not a distinct field of education. Both utilization of existing educational theory and the creation of like experiences for both the distant and local learner are emphasized. Traditional distance education theorists will need to address the changes to distance education facilitated by new technologies. Advocates of the new theories will need to consider their impact on the traditional strengths of distance education. Specifically, the focus of the new theories on face-to-face instruction eliminates the advantage of time-independent learning that traditional theories of distance education value. The debate on these theoretical issues will only increase in the face of continued change.

One indication of the impact of change in distance education theory is the Fordist/post-Fordist/neo-Fordist debate. Fordist distance education is administered centrally and involves mass production of curricula for mass consumption. Rapid changes in society have resulted in diverse market needs. The Fordist paradigm is unable to respond quickly to these needs. The post-Fordist paradigm implements a decentralized, democratic administration that focuses on the consumer. In this paradigm, teachers have a high responsibility to respond to individual needs of students. Central to the debate between Fordists and post-Fordists are changing views about how learning occurs. The Fordist approach is based in behaviorism learning theory in which knowledge is delivered to the learner. The constructivist approach to learning in which individuals give meaning to the world through experience underlies the post-Fordist position. The debate on these differences will continue as distance education adapts to meet the needs of a changing society.

An environment in which technology, society, economics, politics, and theories of learning are all in transition suggests that definitions, theories, and the practice of distance education will continue to be contested. This theme of change will both challenge and motivate distance educators and researchers as they strive to understand and develop effective ways to meet the needs of learners around the world.

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Glossary of Terms

3 x 4 Aspect Ratio

A horizontal format three units high and four units wide that is required for television. This is the way that the television lens "sees" an object.

A/V

Audiovisual presentation devices such as overhead projectors and slide projectors.

Access Control

The ability to selectively control how to get at or manipulate information in, for example, a Web server.

Accessibility

The art of ensuring that, to as large an extent as possible, facilities (such as, for example, Web access) are available to people whether or not they have impairments of one sort or another.

Acoustic Echo Canceller

A form of adaptive echo canceller that produces an electronic replica of the potential echo to subtract from the transmit audio. The goal of the acoustic echo canceller is to reduce the amount of direct and reverberant loudspeaker coupling to the microphone to prevent echo. To achieve this, the Digital Signal Processor algorithms used in today's devices require an audio system that is feedback stable.

Acronym

When a new word is formed from the first letter or syllable of other words as in IBM for International Business Machine.

ACSS (Audio Cassette Style Sheets)

A language for telling a computer how to read a Web page aloud. This is now part of CSS2.

Active Classroom A classroom environment in which the student is engaged in their learning through cooperative efforts.

Active Involvement

The student participates in learning events rather than sitting passively.

Ad Lib

An unplanned part of a presentation or script. It consists of words and gestures.

ADA

1. The 1990 Americans with Disabilities Act. Review before developing telecourses. 2.

Activity/Discussion/Application. The student is asked to do something and then to think about what they have done.

ADC

Analog to digital converter. A special device that converts an analog signal to an equivalent digital signal.

Address

A special identification tag that identifies an Internet site or World Wide Web site. Examples include e-mail for the Internet and URL's for the WWW.

Adult Learner

A person who is responsible for decisions that affect their life and the resulting consequences. Could be legal age designated as 18 or 21.

Advanced Organizer

A brief overview of new material to be introduced into a telelesson. It is presented before the teleclass begins.

Advanced Research Projects Administration Network (ARPANET)

A worldwide data communications network established by the U.S. Department of Defense in the 1960s that evolved into the Internet.

ALN

See Asynchronous Learning Network.

Amaya

An open source Web browser editor from W3C and friends, used to push leading-edge ideas in Web client design.

Analog

A general term used to refer to any continuous physical property such as voltage, current, fluid pressure, rotation, and so on. (2) Continuously varying in frequency and amplitude. Televisions and telephones have traditionally used analog technology to re-create voices and pictures. Analog is much slower and has poorer quality than does the digital technology that is rapidly replacing it. (6) Representations that bear some physical relationship to the original quantity, usually a continuous representation (electromagnetic wave) where information is encoded in direct relationship to the power of the original light or sound source, as compared to digital representations where information is presented as discrete numbers, steps, or time intervals. (See Digital). (9) Information represented and transmitted in the form of a continuous electromagnetic wave (contrast with digital).

Analog Transmission

Transmission of a continuously variable signal as opposed to a discretely variable signal. Physical quantities such as temperature are continuously variable and so are describes as "analog."

Andragogy

Referring to adult learning. Made popular by Malcolm Knowles in his theory of andragogy or adult learning.

Anecdote

A very short, entertaining account of an incident. It is usually personal or biographical. It is a very short narrative, story, or yarn.

Animation

A production technique that uses cartoon-like figures to create the illusion of movement. The use of sequences of cartoons, drawings, graphics, and models to simulate real life characters in apparent motion.

ANSI American National Standards Institute.

It is the group that is responsible for setting standards for most computer and audiovisual equipment.

Apache

An open source Web server originally formed by taking all the "patches" (fixes) to the NCSA Web server and making a new server out of it.

Application

1. A function or task that is carried out by the computer. Examples include mailing lists, spread sheets, etc. 2. The third level of the cognitive taxonomy. At this level students are expected to apply rules and procedures to new data or problems.

Application sharing

A feature supported by many desktop videoconferencing systems that allow the participants at both ends of a videoconference to view and edit the same computer application or document.

Applications software

These are programs that are designed to conduct specific tasks or functions such as a spreadsheet or word-processing.

Arbitrary Graphic

The use of geometric and free form shapes, lines, and arrows, coupled with key words and phrases for the purpose of showing visual spatial relationships among ideas. There is no intrinsic meaning to any shape. The meaning is derived from whatever the instructor designates it to be.

Architecture

This refers to how a computer or other electronic devices are physically constructed. It is the internal structure.

ARPANET

See Advanced Research Projects Administration Network.

Artifact

A physical device used in teleteaching, especially on interactive television. It is used to visualize and reinforce ideas often with an analogy. Examples include toys, fishing rods, hats, etc.

Artificial Intelligence (AI)

The computer attempts to simulate certain characteristics of the human brain. (2) Computer programs which perform functions, often by imitation, normally associated with human reasoning and learning.

ASCII

An acronym for American Standard Code for Information Interchange. It is a coding scheme that represents letters of the alphabet, numerals, and special characters as a series of binary digits or numbers.

Aspect Ratio

The horizontal and vertical ratio of a graphic in any presentation format. For instructional television this is equal to three vertical units high by four horizontal units wide. This is how a television lens views people, objects, and graphics. Also referred to as 3 x 4 aspect ratio.

Assessment

Determination of a learner's ability to perform a task, as defined by a performance objective, to a minimum set of criteria. (5) The ability to determine to what degree the specified learning performance objectives have been learned. Assessment involves traditional tests as well as direct observation or product criteria.

Asynchronous

Happening at different times. Asynchronous communications, for instance, is characterized by time independence, that is, the sender and receiver do not communicate at the same time. An example is electronic mail. (4) Not at the same time. (9) Communications in which interaction between sender and receiver does not take place simultaneously (e.g., e-mail or fax). (10) A type of two-way communication that occurs with a time delay, allowing participants to respond at their own convenience. (2) A term that refers to communication in which interaction between the sender and the receiver does not take place simultaneously. (3) A type of communication that can occur at any time and at irregular intervals, meaning that people can communicate online without a pattern of interaction. It is the predominant mode of communication used in e-mail, in Usenet group, and on bulletin boards and websites.

Asynchronous Communication

Interaction between two or more people that is time-delayed, that is, separated by minutes, hours or even days. Correspondence courses and E-mail are asynchronous forms or distance learning. The opposite is synchronous communication, such as talking in the phone or videoconferencing. Good distance learning programs typically use both synchronous and asynchronous communication. (5) A time-delayed communication through some type of recording device. It is replayed at the convenience of the user. Examples include e-mail and voice-mail.

Asynchronous Learning Network (ALN)

A form of distance learning that uses computer-networking technology, especially the Internet, for instructional activities.

Audience

The specific group(s) for which a telecourse is designed. Populations include adults, children, teenagers, firemen, etc. Each of these groups is also subdivided.

Audience Participation

Getting audience participants involved beyond just sitting and listening. This includes discussions, raising hands, games, simulations, and small group activities.

Audience Response System

Each participant has an electronic pad with numbers and letters. As questions and opinions are asked, the participants push the appropriate button and the instructor is given an average response by the group.

Audio Bridge

A black box with multiple telephone connections. Allows three or more people to hold an audio conference from any location. (See also Bridge). (10) Specialized equipment that permits several telephone lines to be joined together in a conference call. (2) A device used in audioconferencing that connects and controls multiple telephone lines to create a conference call.

Audio Cart

A cartridge holding magnetic audio tape. These contain the opening and closing music of a video production.

Audio Mixing

Several different sound sources are synthesized onto an original single master audio tape.

Audioconferencing

The use of telephone message handling equipment to connect multiple parties simultaneously as is done in a conference telephone call. (2) Voice communications, traditionally accomplished by using standard telephone lines, although new technologies, such as the Internet telephony are gaining a portion of the market. When more than one person is in a single location, speakerphones or special audio conference terminal equipment is employed. When more than two locations are involved, multipoint bridging equipment or Internet-based software is used. (3) Voice-only communications linking three or more people at two or more sites by standard telephone lines. Speakerphones are often used to allow several people to participate at the same location; a bridge is often used to link three or more sites. Also called audio teleconferencing. (10) An electronic meeting in which participants in different locations use telephone or audioconferencing equipment (e.g., microphones and conveners) to interactively communicate with each other in real time.

Audiographic

A teleconference system that makes use of narrow band communication channels such as telephone lines to transmit audio, graphics, and computer text files. (9) Transmission of images as well as audio over ordinary telephone lines (includes electronic whiteboards, still video, and computer-based systems).

Audiographic Conferencing

Audio teleconferencing supplemented with visual display. Graphics can include slides, computer images, documents, fax, graphic objects, still-frame video images, etc. (5) The use of a telephone bridge to connect a group of students at multiple locations. All students hear the instructor can dialogue among any of the individual sites. Speakerphones are used to allow a number of students to talk at will.

Audiographics

A form of audioconferencing that allows for limited graphics capability as might be provided by an electronic blackboard or document camera. (2) Teleconferencing that interconnects graphic display devices, such as computer monitors, located at sites separated by a distance. The technology generally allows the participants to view the same high-resolution [Video Graphic Array (VGA) or better] still-frame visual at each site. Some systems allow annotation, writing, or drawing on the screen. (5) A synthesis of telephone, television, computer and print capability. It uses narrow band signals like telephone to transmit audio and graphic signals. (10) A sophisticated computer application relying in graphic computer interaction augmented by two-way, real-time audio communication. Audio, data, and graphics are shared over telephone lines, allowing users in different locations to simultaneously work on the same application.

Audio-only Conference

A type of conference in which communication takes place by voice only.

Audiovisual

Information recorded as non-print audio sounds and visual images such as audio cassette, video, graphics, and 16 mm films.

Authoring Language

A user-friendly programming language used to develop specific applications such as teaching presentations, computer-assisted instruction, and multimedia. Examples include HyperCard, Astound, ToolBook, PowerPoint, and Authorware.

Authoring System See Authoring language.

Backbone

The National Science Foundation originally funded a series of high-speed electronic links that became known as the Internet. This also refers to the National Information Superhighway. These are trunks of telecommunication lines, such as fiber optic, that connect multiple networks at any location. (2) A primary communication path, usually a multi-conductor wire cable or multi-strand optic cable, from which other communication paths branch to customers.

Backlight

Lighting used behind or over the head of the instructor to provide highlights of key features such as hair, head, or shoulders, Backlights add depth to a picture.

Backup

A copy of data, print, or graphic in case the original is destroyed. (2) A copy of an electronic file, retained in case the original is damaged or rendered unusable.

Balance

1. The correct intensity between the bass and treble of an audio signal. 2. Balance also refers to the composition of a graphic.

Band

A range of frequencies between defined upper and lower limits. For example, the Medium Frequency (MF) band, as designated by the International Telecommunication Union (ITU), is 300-3,000 kHz.

Bandwidth

In communications, the frequencies within which signals can be transmitted and received. Bandwidth directly relates to data transfer speed. The greater the bandwidth, the faster the data transmission speed. (4) How much data can be transferred from one computer to another per second defines the bandwidth. (5) The amount and rate of transmission capability that an electronic device can handle to transmit information. The larger the bandwidth, the more information can be transmitted. This is the transmitted signal in different ranges of frequencies (highest to lowest), measured in cycles per second (bauds) for digital signals. Television requires a wide band circuit and uses up an inordinate amount of available bandwidth which will severely limit the growth of newer technologies such as the cellular phone. Wires and cables are used mostly for voice communication, which require a fairly narrow bandwidth. Today the transmissions that go over the air and need the most bandwidth, television, are the medium with the least available space. The signals that need the least bandwidth are sent through wires and fiber optic, the medium with the greatest space available. This flip-flop will have to change. One video channel can provide 1200 voice telephone channels (Newton, 1991). The prefix "kilo" equals one million, "giga" one billion and "tera" is one trillion. A T-1 transmission is 1.5 mbps and a T-3 transmission is 45 mbps. (6) The width of an electronic transmission path or circuit, in terms of the range of frequencies it can pass without distortion. The wider or greater the bandwidth the more information can be carried by the medium of transmission. Typically measured in Hertz, but may be expressed in bits per second; a TV channel requires about 6 megahertz. (9) The range of frequencies that can be carried by a telecommunications carrier (e.g. telephone lines, satellite transmissions). Measured in Hertz (Hz). (10) The frequency width needed to transmit a communication signal without excessive distortion. The more information contained in a signal, the more bandwidth is required for distortion-free transmission.

Bar Code

A series of vertical lines of different widths that can be read by a scanner. It is used to scan prices on merchandise or food; It is also used to store tests. (2) A type of code used on labels and read by wand or bar code scanner. The main application is in labeling products and documents in libraries. Also used to input programming code to devices such as videodisc players and CD-ROM players.

Barcode Reader

An infrared scanning device that interprets barcoded commands for videodisc and CD-ROM players.

Basic Rate Interface (BRI)

A digital communications circuit with 128 Kbit/s of bandwidth. Integrated Services Digital Network (ISDN) BRI circuits can send three digital signals over a single pair of copper wires: two voice (B) channels and one signal (D) channel. (3) One of two "interfaces" defined in ISDN. Basic rate Interface provides two B-channels at 64 kbps and a data D-channel at 16 kbps.

Baud

A unit for measuring the digital transmission speed of any data. One baud equals one bit per second. 300 baud is low while 33,600 baud is fast. (10) The transmission rate at which data flows between computers. It is synonymous with bits per second (bps).

BBS

See Bulletin board system. (9) A form of computer conferencing system that usually runs on a personal computer.

B-channel

A "bearer" channel that is a functional component of Integrated Services Digital Network and B-Integrated Services Digital Network interfaces. It carries 64 kbps in either direction, is circuit switched and can carry either digitized voice or data bits.

Binary Language

Developed on two letter alphabets, e.g., "on," "off"; "X," "O"; "1," "2"; and so forth.

Binary Digit

In the binary number system, the binary digit is either 0 or 1. See also Bit. (2) Having only two states-on and off, values 0 and 1, yes or no, signal or no signal.

Biographical Sketch

A one-page brief resume of an individual highlighting key biological points such as education, experience, honors and recognition, and personal hobbies or use of leisure time. It is used for introductions, or newspaper releases.

Bit

A binary digit. In the binary number system, the bit is either 0 or 1. In electronic storage, it represents the smallest unit of data and is characterized as being either "on" or "off". Groups of eight bits are combined to represent characters of data that are referred to as bytes. (2) A contraction of binary digit. The binary digit, or bit, has two values - one or zero. An analog signal can be converted into a continuous stream of digital bits and transmitted over copper or fiber optic. A bit is the smallest unit of data that a computer can recognize. (3) The abbreviation for a single binary digit. (See Binary).

Bits Per Second (BPS)

The number of bits transmitted per second.

Black Box

An electronic device that can alter input or output signals of electronic equipment in a specified way. The technical operation is irrelevant to the instructor.

Blocking

How you use your stage space. This includes props, equipment, and movement from one position to another, change of position as a transition to an important point.

Body Language

The use of nonverbal communication to reinforce key ideas while teaching on television.

Body Text

Text that forms the bulk (or body) of a document.

Boldface

A darker type print font used to cue or highlight headings from a text.

Bookmark

A URL WWW address that is kept for immediate use.

Boot

To start or restart a computer.

BPS

See Bits Per Second.

Breakout Session

Participants are placed into small groups of 3-8 participants for the purpose of discussion, problem solving, competition, or clarification.

Bridge

A device for linking three or more channels of voice or data. Also, a computer that connects two or more networks and forwards packets among them. (5) a black box that links three or more channels for voice or data transmission. (See also Audio Bridge). (2) (a) A device for interconnecting communication devices such as telephones and computers or two or more local area networks (LANS). (b) A telephone bridge is an electronic device that links three or more telephone lines together so that individuals can hold a teleconference. Advanced bridges automatically connect, announce those who join and those who leave a conference, and provide a constant volume for all conference participants. (9) A system that allows two or more telephone or videoconferencing lines/sites to be interconnected.

Broadband

A high capacity communications circuit that is capable of transmitting data at speeds up to millions of bits per second. (2) Refers to high-capacity communications circuit, usually with speed greater than 1.544 Mbit/s. (2) A communication system with a bandwidth greater than voice band. Broadbands are capable of high-speed data transmission and usually use coaxial, microwave, or optical transmission. Used to describe high-speed data channels, or one or more video channels. Used to describe digital technologies that provide integrated voice, data, and interactive communication services to businesses and households.

Broadband Signal

This is a term applied to the transmission of data with a wide range of frequencies. Describes transmission facilities capable of handling frequencies above voice grade such as microwave, fiber optics, laser beam, broadcast television. These very fast signals will be used for personal communication services (PCS) such as portable fax and telephones.

Broadcast Quality

Meets National Television System Committee standards. (See also NTSC)

Broadcast Television

The transmission of audio and video signals over the standard UHF and VHF television channels. It is known as full motion video.

Broadcasting A radio wave communication service in which the transmissions are intended for direct reception by a wide spectrum of receivers such as the general public. Broadcast service may include voice, television, or data transmissions. (9) The one-way transmission of information (i.e., conventional radio and television).

Browser

A Web client that allows a human to read information on the Web.

Browser software (Web browser)

Software that provides facilities for accessing Uniform Resource Locators (URLs) on the World Wide Web. Examples of Web browsers include Netscape Navigator and Microsoft's Internet Explorer. (5) A special graphically based tool to allow users to view documents in hypertext over the World Wide Web with the click of a mouse. Examples are Microsoft Explorer, Mosaic, or Netscape Navigator.

BTV (Business Television)

Private television networks used by organizations for training and other communication purposes.

BTW Acronym for "by the way."**Bug**

A random or nonrandom malfunction in hardware or software functions.

Build-Up

Physically construct an idea on a magnetic board with cards and magnets or on cards with Velcro.

Bullet

The character "." (2) Small graphic symbols (circles, triangles, and dashes) used to introduce items or data.

Bulletin Board System (BBS)

This is an on-line bulletin board service that uses asynchronous communication with participants who share an interest in a subject area. Participants can leave messages for each other at any time and respond at any time. Files can be uploaded or downloaded at any time. (10) A personal computer with an auto-answer modem used to access a "host" computer for the purpose of reading and posting electronic messages.

Bundle

A single purchase price for a number of different products such as a computer and selected peripherals and services.

Business Television (BTV)

A technology that employs one-way motion-video from an origination site to multiple receiving sites. Used when it is not important to the content or message to see participants at the receiving sites. Receiving sites generally are provided with a way to respond to the origination site, usually by audio conference (voice), a response system or facsimile. Common transmission systems include satellites and Instructional Television Fixed Service (ITFS). (5) Usually live satellite broadcasts for meetings or training in a corporate environment.

Byte

The minimum amount of primary storage or memory needed to store a character (letter, numeral, special character) of information. It usually is eight binary digits or bits. (9) A unit of computer memory measured in thousands (K), millions (M), or billions (G). (2) A single computer word, usually eight bits. (See Bit). (3) A group (usually 8 or 16) of binary digits (1 and 0) that a computer processes as a unit of information such as a letter, character, or number.

C

Centi or one hundred.

Cable

The physical channel by which television and data signals are transmitted. Coaxial cable is made up of copper wires. Fiber optic cable is made up of high quality glass fibers.

Cable Television

A coaxial cable analog television transmission system used primarily by local cable companies. The cable connects local subscribers to a central community antenna that picks up signals from a satellite. There are also "wireless" cable systems that distribute television signal via antenna. (6) Broadband radio-frequency transmission of video signals over coaxial cable or optical fiber directly to television sets in the home as opposed to broadcast television. Video signals may be transmitted in one or more directions, thereby enabling viewers to input data. Cable television also makes possible pay services and video conferencing.

CAD

Computer-aided design for computer-assisted production of drawings and graphics.

CAI

See Computer-assisted instruction.

Camcorder

A small television camera which uses 1/2" videotape. It is highly portable.

Canned

A prepared presentation that is used repetitively.

Capacity

The amount or volume of information that can be physically stored in a computer.

Caption

A title, graphic, or spoken comment about a graphic or something else on a TV screen.

Capture

To capture data in order to save a disk. The data captured can be viewed at a later time.

Carrier

The frequency within a given bandwidth upon which an information-carrying signal can be impressed or modulated with another information carrying signal. (b) An organization, company, or business (vendor) authorized by a government regulatory agency to provide a specific communication service. (c) A carrier system using one of many modulation processes in order to receive more than one channel from a single path.

CATV Community Antenna Television or Cable Television Delivery System.

(9) (Cable Television) The delivery of television signals via coax or fiber-optic cable connections, managed by commercial or nonprofit organizations.

CAV (Constant Angular Velocity).

A CAV videodisc revolves continuously at 1800 rpm, one revolution per frame, making each frame of a CAV disc addressable, a basic requirement for interactive videodiscs.

C-Band

A special bandwidth to send (uplink) a television signal to a transponder on a satellite. The television signal is then distributed (downlink) to C-band satellite receive dishes also called earth stations. (See also Ku-band). (9) The original frequency in the 4-6 GigaHertz range used for satellite transmission that uses large receiving dishes (3 meter). (10) A type of satellite transmission with less path loss than other satellite standards such as a s Ku Band. C-band, however, requires a relatively large antenna. C-band frequencies are shared with terrestrial microwave transmissions, which can cause interference with weaker satellite signals in certain areas. (2) A radio frequency band allocated to transmit satellite television or telephone signals. Signals in the C-band are transmitted at 6 Gigahertz and received at 4 Gigahertz.

CBI

See Computer-based instruction.

CBT

Any training and/or education that uses a computer. This includes Computer Learning Centers, simulators, and networked computers.

CCTV

Closed circuit television. The signal is scrambled so that it may be received by groups that have a descrambling device. (See also Closed circuit television). (9) A system for transmitting television signals over a private cable network.

CD

(Compact Disc). A format that records digital data on 12 cm. Optical discs.

CD-I

Compact disc-interactive. The student interacts with the instruction presented through the computer in the form of still images, computer graphics, audio, and computer data. (2) (Compact Disc-Interactive). A compact disc format that includes audio, video, and program data.

CD-ROM

An acronym for compact disc-read only memory. It is a form of high-capacity optical storage that uses laser technology. (5) Compact disc-read only memory. Used for audio, graphic, and video play back. Up to 640 million bytes of data can be stored on a single disc. (9) The form of CDs that can store information in digital form and can be read by computers. (2) Compact disc-read only memory. A format for recording data on compact disc, permitting virtual storage of a large amount of information in a small format.

CD-Rom XA

Compact disc-read only memory extended architecture. A format for integrating audio and data within a basic CD-ROM format.

Center of Interest

That point in a graphic that the eye is drawn to. (See also Rule of thirds).

Centering

The position of the instructor on a television screen. The instructor should be centered in the middle of the screen if sitting or standing.

Central File Server.

The central or host computer in a network that provides files and programs to other computers.

Central Processing Unit (CPU)

The part of a computer hardware system that directs all processing activities. It consists of electronic circuitry and includes a control unit, an arithmetic-logic unit, and a primary storage or memory unit. On large computers, the term is used to refer to the entire main computer console. On some microcomputers, it refers only to the control unit and the arithmetic-logic unit. (5) The electronic circuitry that executes a stored program of instructions. Is made up of the control unit and the arithmetic/logic unit. The main chip or processing engine of a computer. (10) A computer system's central processor. Contains main storage, arithmetic unit, and registers (Sipl, 1990).

CERN

The European Particle Physics Laboratory, located in the French-Swiss border near Geneva, Switzerland.

Channel

A transmission path between two points. It is also called a line, a circuit, or a link.(2) The segment of a bandwidth that provides a pathway or a communication link between sending and receiving points.

Character

Any piece of data such as letters, numbers, symbols, or blank spaces stored and/or processed by a computer.

Character Generator

An alphanumeric, typewriter-like device that electronically creates graphics and text on a television monitor without using a television camera. This is also called a caption-generator.

Chat

A real time conversation among computer users - similar to the telephone.

Chat/IRC (Internet Relay Chat)

A chat system that was developed by Jarkko Oikarinen in Finland in the late 1980s. IRC allows people connected anywhere on the Internet to join in on live discussion that is not limited to just two people. In order to participate in an IRC chat, participants need IRC Client software and Internet access. The client software runs on the participant's computer and sends and receives messages from an IRC sever. The IRC server, in turn, broadcasts all messages to everyone participating in the discussion.

Chip

The building block of a computer which performs many functions such as memory and computations. These contain a great many circuits and transistors. It is a thin silicon wafer containing integrated circuits. It is the basis of all digital systems.

Circuit switching

Coding/decoding equipment used to convert and compress analog video signals into digital formats and vice versa.

Click-Stream

Information collected about where a Web user had been in the Web.

Client

Any program that uses the service of another program. On the Web, a Web client is a program, such as a browser, editor, or search robot, that reads or writes information on the Web.

Client Server System

A distributed data communications system in which computers perform two important functions either as "clients" or "servers," which locates the data on the data communications system and processes the request for the client.

Client-Server Application

A network architecture in which each computer or process on the network is either a client or a server. Servers are computers or processes dedicated to managing disk drivers (file servers), printers (print servers), network traffic (network servers), or other processing services. Clients are PCS or workstations on which users run applications. Clients rely on servers for resources such as files, devices, communications, processing power. Client-server architectures are sometimes called two-tier architectures.

Clip

A short piece of audio or video source material stored on tape.

Clip Art

Copyright free graphic line art that uses line drawing (black and white only) and halftone (shades of gray). It is available in hard copy (print) and on computer discs. Increasingly available in color.

Clip Media

Digital files or libraries containing images, video, sounds, and other media that can be readily incorporated into a multimedia program.

Clone

A computer or other product that is an exact copy of the original.

Closed Circuit Television (CCTV)

A television system capable of producing, distributing, and receiving television programs. It is designed for a restricted area such as a single building of a whole campus. Signals are not distributed outside of this area unless desired.

Close-up Shot

A television shot that shows the head and shoulders only or fills the television screen with an object.

CLV (Constant Linear Velocity).

A CLV or extended-play videodisc maintains a consistent length for each frame, thus enabling longer playing time per side, but sacrificing individual frame access in most players. Reference to locations on CLV discs is limited to time in minutes and seconds.

CMC

Computer-mediated communications for the purpose of teaching at a distance in synchronous or asynchronous time.

CMI

An abbreviation for computer-managed instruction. The computer is used to record data and prescribe a learning sequence.

CMS

See Course Management System.

Coaxial Cable

A metal carrier (single copper cable) of broadband and baseband signals. These can be used to transmit television, telephone, and telegraph signals.

Codec

Coding/decoding equipment used to convert and compress analog video signals into digital formats and vice versa. (5) (code and decode). An analog signal, such as television, is converted to a digital, transmitted by any electronic means, and then converted back to analog signal when received. The codec is the electronic black box needed to do this. (9) A device used to convert analog signals to digital form (and vice versa), primarily used in video transmissions. (10) coding-decoding equipment used to convert and compress analog video signals into a digital format for transmission, then convert them back to analog signals upon reaching their destination.

Coder-Decoder (CODEC)

Videoconferencing hardware that codes the outgoing video and audio signals and decodes the incoming signals. Before transmission, a CODEC converts analog signals to digital signals and compresses the digital signals. Incoming audio and video signals must be decompressed and converted from digital back to analog. (6) A coder-decoder (analog -to-digital and digital-to-analog converter) is used to convert analog signals, such as television, to digital form for transmission and back again to the original analog form for viewing.

Cognitive

The means by which a student obtains new knowledge. It can be memory, reasoning, or evaluation. This is usually referred to as the cognitive outcomes of learning.

Color Bars

A television test signal that is electronically generated. They appear as colored vertical bands. This allows the engineer to test for the correct color resolution and make adjustments accordingly.

Color Separations

Printing color pictures requires the preparation of four separate printing plates (one each for black, yellow, cyan, and magenta). The negatives for each plate, called separations, are made by photographing the original color pictures through different-colored filters. Analogously, in computer-generated graphics, separations are those "pictures" which, when combined, provide a full-color representation.

Communications Control Program

See Communications controller.

Communications Controller

A data communications device that is used to send and receive messages from multiple sources. A multiplexor is an example of a communications controller. In some networks, communications controlling is performed by computer programs that also are referred to as communications controllers.

Communications Satellite

An earth satellite designed to act as a telecommunications radio frequency relay that is positioned in geosynchronous orbit 22,300 miles above the equator so that it appears from earth to be stationary in space.

Compact

An agreement among a group of states, referred to in Article 1 of the U.S. Constitution, which limits the sovereign power of the states. In the U.S., interstate or regional compacts have been formed in the area of higher education, water, energy, interstate parks, etc. Typically, interstate compacts require approval by the U.S. Congress and the President.

Compact Disc Interactive

See CD-I

Compact Video

One of several devices used for storing large quantities of digital information for access by computers (about the size of an audio compact disc).

Compressed Video

A computer software technique used to reduce the number of bits or bytes needed to store or transmit a video file. Formulae or algorithms are used to replace empty or duplicate bits or bytes in a video file with coded bits and bytes that are then used to reconstruct the original video file. Compressed video is used most frequently when data transmissions are slow or limited due to narrow bandwidth communications. (2) When the vast amount of information in a normal television transmission is squeezed into a fraction of its former bandwidth by a CODEC, the resulting compressed video can be transmitted more economically over a smaller carrier. Some information is sacrificed in the process, and this may result in diminished picture and sound quality. (6) A method of reducing the size of digital video files. It is often accomplished by removing redundant portions of frames and by saving only those portions of images that change from frame to frame. (9) Video images in digital form that allow redundant information to be eliminated, thereby reducing the amount of bandwidth needed for their transmission. The amount of compression (i.e., bandwidth) determines the picture quality. (10) A digital transmission process used to transmit a video channel. While compressed video requires less bandwidth, signal quality is reduced. As a result, picture quality is generally not as good as full-motion, with quick motions often appearing somewhat blurred.

Compression

Methods used to substantially reduce the amount of information sent in a video, audio, or data signal.

Computer

An electronic device that accepts input, processes it according to a set of instructions and produces the results as output. Computers can be classified as supercomputers, mainframes, minicomputers, laptop computers, and so forth, depending on physical size, speed, and peripheral devices.

Computer Assisted Instruction

Computer-assisted instruction uses the computer "as an instructional medium similar to other media such as slide/tape, video, or textbooks" (Kearsley, 1983, p. 30).

Computer Conferencing

Three or more computers are interconnected via telephone lines or microwave usually on a listserv. Users communicate with the keyboard. Video clips, telephone and fax could also be used. Communicating is conducted through a computer network.

Computer Interface

The black box that is used to connect peripheral equipment to a computer or a computer with other devices such as a television.

Computer Learning Center

Traditional classroom augmented by computers or different time/same place tutorials that people can log in according to time availability.

Computer Managed Instruction (CMI)

Computer use encompassing broad management of curriculum including discrete learning objectives, but also administrative matters of guidance, evaluation, and referral to instructional aids.

Computer Network

A number of interconnected computers that are physically separated at any distance.

Computer-Assisted Instruction (CAI)

The use of the computer in an instructional process in which students progress is monitored and recorded for subsequent instructions and review. Most CMI applications also are able to adjust material to each individual student's level of understanding. (6) Computer use designed to enable students to gain mastery of a discrete learning objective such as spelling list as one part of a larger teacher-centered curriculum.

Computer-Based Examination

An examination conducted on a computer. An example of this is an examination that is created by the computer where each student receives a different subset of questions that are randomly generated by the computer from a question pool.

Computer-based Instruction

Instruction delivered via the computer. Computer-based instruction takes advantage of the interactive nature of the computer. It is an inherently active mode of learning.

Computer-Conferencing

Conducting a conference between two or more participants at different sites by using networks to transmit any combination of text, static pictures, audio and/or motion video. Multipoint conferencing allows three or more participants to sit in a virtual conference room and communicate as if they were sitting right next to each other.

Computer-Managed Instruction (CMI)

The use of the computer to assist in the instructional process, One of the earliest used terms to refer generically to computer applications in education, it is also used to refer to tutor-type applications such as drill and practice, and tutorials.

Computer-Mediated Communications (CMC)

The use of computer systems that incorporate communications software such as e-mail or LISTSERVs to enhance distance learning and computer-managed instruction applications.

Concept File

A collection of visual materials grouped by single idea or concept.

Concept Graphic

An abstract, yet recognizable, graphic with minimal detail such as a symbol, stick figure, or silhouette.

Cone of Experience

Edgar Dale (1946) put forth a theory of learning referred to as "Dale's Cone of Experience." In Dale's theory children have to learn by direct exposure and experience because they have no previous knowledge base. Adults, on the other hand, have the benefit or previous experience to learn new information. This can be done by use of analogy. As learners grow older and have more experiences, it is possible to understand events that are less realistic and more abstract.

Conferencing Interactions

Among people via computer, video, or audio delivery. It has been described as "many-to many" communication. Communications can be in synchronous or asynchronous time.

Connect Time The amount of time it takes to connect to an on-line service such as America Online, CompuServe, or Prodigy.

Connectivity

Refers to the communications facilities (i.e., coaxial or fiber optic cable, telephone systems, computer equipment) that enables users to connect to computer networks.

Connector

A term used in constructing an analogy. It is the statement that joins the known and unknown components such as "is like...", "resembles," or "is compared to..."

Constraints

The limitations that must be taken as "given" in a planning situation, i.e., limits that are realistic within the current situation. These limitations include resources such as personnel time, money, energy, as well as time required to complete, cultural imperatives, and the like.

Constructivism

Theory of learning that stresses the importance of experiences, experimentation, problem solving, and the construction of knowledge.

Consumer Assessment

Student or trainers evaluation of the value and desirability of a product such as telelesson or telecourse. The collected data is usually made public.

Content Expert

(Subject Matter Expert). The instructor who designs a telecourse. Usually possesses a terminal degree in the field of specialty. (See also Subject matter expert.)

Continuous Presence

An industry term applied to multipoint videoconferences in which multiple video images are active on the same screen at the same time.

Convergence

Combinations of independent technologies such as telephone, television, computer, fax and voice.

Cookbook

Step-by-step procedures to accomplish a task.

Copper Wire

A standard transmission method for telephone and television signals. Rapidly being replaced with glass fiber optic.

Copyright

The legal right of ownership of intellectual property. Everything is legally copyrighted at the moment of creation. To protect against infringement, a work should be submitted to and registered with the Register of Copyrights - Library of Congress - Washington, D.C. 20559

Corner Insert The instructor's head appears in the upper right hand corner or any other corner of the television monitor as s/he speaks to a picture or graphic. (See also Picture-in-picture)

Correspondence Course

This is the simplest and oldest form of distance education. Assignments are mailed to the learner. The learner completes the assignment and returns it to the instructor for grading. Feedback is provided via mail and the next assignment is mailed to the learner. The cycle repeats until the course is completed. This form of education is inexpensive, can be completed anywhere, and has been proven effective.

Course Authoring Software

Software specifically designed to assemble and electronically publish educational and training courses. The courses may be interactive in nature, wherein several students can interact, or may involve only the interaction of the student and computer.

Course Management System (CMS)

A set of computer software tools designed to enable users to create Web-based courses, Examples include WEBCT, TopClass, and LearningSpace.

Courseware

Instructional materials in a completely mediated format. May refer to a single instructional component, such as computer assisted instruction program, or a multiple instructional entity, such as guidebooks, videodiscs, and computer-assisted instruction. Software that is designed to be used in some type of educational process.

Covert Behavior

A behavior that is not directly observed. A mental activity.

CPU

See Central Processing Unit.

CPU (Central Processing Unit).

The component of a microcomputer in which the data processing takes place.

Crash

A computer software error or hardware malfunction that causes a stoppage of work. It is either a human or machine error.

Crawl

An electronic reading aid for instructors on interactive television. Electronically generated words crawl across the bottom of a television screen and are read or paraphrased by the instructor.

Creativity The ability to identify that parts and relationships of known objects and then to reassemble these parts with new and unique relationships. It is the ability to see new connections and relationships. The ability to change perspective and take the ordinary extraordinary and the unusual commonplace.

Crop

To adjust, cut, or trim a graphic or picture to eliminate unwanted parts in order to fit within a 3 x 4 aspect ratio for the television or computer screen.

CRT

A cathode-ray tube or video monitor at a computer terminal.

CSS (Cascading Style Sheets)

A W3C recommendation: a language for writing style sheets. See also Style Sheet.

CUE

The attention of the student is directed towards an important idea. Cues include such things as color, underlining, italics, fill-ins, verbal directions or intonations, or nonverbal gestures.

CUL

Acronym for "See you later"

CU-SeeMe

Audio and video communication transmitted over the Internet. It is a highly compressed format. It is a software package that allows videoconferencing over a network.

CUT

A single frame transition between two video clips.

Cut-In

A noncritical movie or television shot used to break up or transition sections of the principal action.

Cybernetics

(a) The science of communications and control in animals and machines. (b) A theory of communications and control that accounts for the operation of systems in terms of feedback effects.

Cyberspace

Descriptive term for the Internet. (5) Consists of "virtual" space or the place where individuals correspond over the Internet. The concept was introduced in 1985 by William Gibson in a science fiction story entitled *Neuromancer* to describe the Internet. It is like a black hole where time, distance, and identity all collapse. There is no form and few conventions. Harasim (1994) says it "connoted a future world mediated by computer networks, with direct and total access. It is mental and sensorial to a parallel world of pure digitized information and communication. A consensual hallucination" (p.9).

Cyc

A knowledge-representation project in which a tree of definitions attempts to express real-world facts in a machine-readable fashion. (Now a trademark of Cycorp Inc.).

Data

"The formalized representation of facts or concepts suitable for communication, interpretation, or processing by people or by automatic means" (Spencer, D. (Ed.). *Webster's New World Dictionary of Computer Terms*, 1994, p. 144).

Data Communications

The methods and media used to transfer data from one computer device to another. Common data communications media include coaxial cable, telephone, fiber optics, and satellite systems.

Data Conferencing Refers to a communication session in which two or more participants are sharing computer-based data in real time. The keyboard/mouse can control either screen. Voice communication can be out-of-band via a totally separate voice connection or in-band using any one of the simultaneous voice and data technologies.

Database

A clearly defined set of information or data for a specified purpose. Examples could include a general or special dictionary or a collection of addresses.

Database

The generic name for software designed to enter, manage, search, and retrieve information from multiple lists.

DBS

See Direct broadcast satellite. (9) A satellite capable of uplinking/downlinking directly to small diameter dishes (1 to 2 feet) at user sites (I.e., offices, homes).

Debug

To remove mistakes (bugs) from a computer program or telelesson.

Decompression

Undoing a state of compression. A software operation that returns a compressed signal to a state that can be shown on a display screen.

Dedicated System or Connection

Any telecommunication system designed for and used by an institution for 24 hours a day, seven days a week.

Definition

The clarity or resolution of the detail of a picture on a television or computer screen ranging from fuzzy to sharp.

Degauss

The demagnetizing of magnetic audio or video tape, or television monitors.

Delivery Medium

The physical means of providing a telecourse. The delivery medium could include audio, video, computer, print, and combinations of all.

Delivery Options (Telecommunications)

The means to electronically deliver a telecourse to students at field sites. Options include audio, video, computing, print, and combinations.

Delivery System

The total system of electronically originating, distributing, and receiving a telecourse program. It refers principally to the physical delivery system or hardware.

Depth of Field

The area of the teaching stage in a teleclassroom that is sharply in focus.

Design

Frequently used as an abbreviation for graphic design.

Desk Top Two-way Audio/Visual

Progress is being made towards "desk top" 2-way A/V through the use of Personal Computers. This will reduce the need for special equipment and special networking.

Desktop Camera

A small television camera that is placed on a desk next to the instructor. It is also called a visualizer. It is used to transmit graphics and pictures placed under it. (See also Document Camera)

Desktop Publishing

The use of computer equipment to develop text and graphics. It usually refers to software that provides enhanced facilities for displaying characters, pictures, and color.

Desktop Video

A small television camera is installed on top of a computer. The users can conference via audio or video as in a videophone with one or more sites. It is videoconferencing on a computer.

Desktop Video Conferencing

A videoconference that occurs between two or more participants located at different sites by using personal computers to transmit and receive audio and video.

Desktop Videoconferencing

Videoconferencing on a personal computer; most appropriate for small groups or individuals. Many desktop videoconferencing systems support document sharing.

Different Time/Different Place

This is what most people think of as distance education. The old correspondence courses were an example of this form of education. The newest form of this is the use of the web and programs such as Web CT, Blackboard, Embanet, etc. Learners and instructors can post assignments and study guides on the web, provide comments and conduct asynchronous conversations.

Different Time/Same Place

This is often thought of as independent study. This is self-paced study. It is still guided by an instructor. However, instructors may be available only during certain hours. Computer Learning Centers are an example of this concept. Learners still have to travel to a central learning facility.

Digerati

A person knowledgeable about the digital age. It is the electronic equivalent of literati.

Digital

Related to digits. Computers are considered digital because all data and instructions are represented as binary digits. (2) Refers to information stored in a binary language of ones and zeros. Computer technology is digital. Audio/video signals are represented by discrete variations (in voltage, frequency, amplitude, location, etc.). In general, digital signals can be transmitted faster and more accurately than can analog signals. For example, music from digital CDs is usually more clear than music from analog records. (9) Information stored in the form of bits (on/ off signals) and which can be stored and transmitted via electronic media. Data is represented as discrete units (on/off) rather than continuous as in analog signals. All information encoded as bits 1s and 0s that represent on and off states. Digital

signals are always in a state of on/off. They are less susceptible to interference and noise and can be stored and manipulated by a computer. It is contrasted with analog. Once data is digitized, it can be stored and changed. A method of processing, transmitting, and storing data that operates in discrete electronic or optical steps as contrasted to a continuous or analog method. Digital communications/switching is the transmission of information using discontinuous, discrete sequences of electrical or electromagnetic signals that change frequency, polarity, or amplitude to represent or encode for transmission on digital communications systems. (See Analog).

Digital Signature

A very large number created in such a way that it can be shown to have been done only by somebody in possession of a secret key and only by processing a document with a particular content. It can be used for the same purposes as a person's handwritten signature on a physical document. Something you can do with public key cryptography. W3C work addresses the digital signature of XML documents.

Digital Video (DV)

Videotape in digital format as opposed to analog. Video signal that have been encoded as a series of binary digits. In this format they can be accessed and manipulated in a computer program.

Digitizer

Any device used to convert analog (continuous physical property such as voltage or current) signals into binary or digital format.

Digitizer

A generic term for a scanner or video digitizer.

Direct Broadcast Satellite (DBS)

Transmission of video and audio signals directly to homes through small 18" rooftop receive systems that are locked onto one satellite program source. Services are by subscription. (6) A satellite system designed with sufficient power to transmit signals directly from orbit to small inexpensive earth stations for direct residential or community reception. This eliminated the need for a local cable loop by allowing use of receiving disks with a diameter of a meter or less mounted directly on a building.

Directory

A grouping or catalog of file names that reside on a secondary storage device such as a disk. A directory is also referred to as a folder. A special list of files on a selected topic located on another computer at an Internet site.

Dish

This is also called an earth station. A mechanical device, a parabolic antenna, used for transmitting or receiving signals from a satellite transponder.

Disk Drive

A data storage device in a computer that contains a magnetic coating to store the data.

Disk Operating System

A generic term used to refer to any operating system that resides on a disk device and is loaded as needed into primary storage. (5) The system that operates all of the control functions of a computer.

Disk Operating System

See DOS.

Diskette

A magnetic disk measuring 5 1/4" or 3 1/2". Data is recorded on it as magnetic spots.

Display

A "chunk" of information similar to a written paragraph. Displays consist of word pictures, graphics, pictures, exercises and activities, directions, etc. There are usually two or three displays per page as found in an interactive study guide. A display could cover two or three pages if it is a reprint of a short article, case study, or simulation.

Dissolve

A transition television picture that appears as if one picture fades into another from side to side or from top to bottom.

Distance Education A generic, all-inclusive term used to refer to the physical separation of teachers and learners. (3) [Distance Education, Distance Learning, Distributed Learning] The application of information technology (and infrastructure) to educational and student-related activities linking teachers and students in differing places. (5) The student and instructor are physically separated by any distance. All communications are mediated by some type of electronic means in real or delayed time. Location is of no significance. (6) The organizational framework and process of providing instruction are a distance. Distance education takes place when a teacher and student(s) are physically separated, and technology (i.e., audio, video, computers, print) is used to bridge the instructional gap. (See Distance Learning). (10) The organizational framework and process of providing instruction at a distance. Distance education takes place when a teacher and student(s) are physically separated, and technology (i.e., voice, video, data, or print) are used to bridge the instructional gap.

Distance Instruction Planning

When planning for instruction at a distance, the focus shifts to more visual presentation, engaging the learners (learner centered versus instructor centered), and the timing of the presentation of material. Traditional materials are often revised to illustrate key points and concepts using tables, figures and other visual imagery. Activities that encourage interactivity need to be incorporated. Student group work activities need to be well planned (helps construct supportive social environment). Plans must be made for alternative delivery because equipment failures occur. Contingencies must be discussed beforehand. Other considerations include: lack of eye contact and body language (informal feedback), increased time constraints, the necessity of established milestones, and increased time and/or complexity for distribution of materials.

Distance Learning

A term for the physical separation of teachers and learners that has become popular in recent years, particularly in the United States. While used interchangeably with distance education, distance learning puts the emphasis on the learner and is especially appropriate when students take on greater responsibility for their learning as is frequently the case when doing so from a distance. (2) A system and a process of committing learners with distributed learning resources. This definition is from the American Council on Education (ACE). (6) The desired outcome of distance education, i.e., learning at a distance. (See Distance Education). (10) The desired outcome of distance education, i.e., learning are a distance. See Distance Education.

Distance Learning System

An integrated combination of technologies designed to support interactive teaching and learning among persons not physically present in the same location. Such systems often emphasize one technology but draw on others for increased flexibility. For example, a system built on video as the primary method of delivery may use voice mail, E-mail, Internet multimedia databases, and fax technologies to provide additional interaction between and support for the participants.

Distributed System

A form of computer processing that distributes and links hardware over some geographic area as in a network. It assumes that the local hardware can perform some tasks as well as expand its capabilities by connecting to other hardware.

Distributed Disks/CD ROM

Stand alone training distributed via computer disks (of various sizes) and/or Compact Disk (read only memory). A USCG R&D study showed equipment training based on CD ROM was effective and reduced the time required to train the equipment by 70% versus traditional classroom/lab training. CD ROM is popular because it carries 75 MB of information. DVD is emerging technology.

Distributed Learning

"...an instructional model that allows instructor, students, and content to be located in different, non-centralized locations so that instruction and learning can occur independent of time and place. The distributed learning model can be used in combination with traditional classroom-based courses, with traditional distance learning courses, or it can be used to create wholly virtual classrooms" (Saltzberg & Polyson, 1996, January, p. 10).

Distributed Network

A system whose databases are spread among many computers worldwide rather than clustered in a single location.

Document

A computer data file such as a single Web page, a text file, a database file, a graphic file, etc.

Document Camera

A small television camera placed on a table that is capable of capturing the pictures, graphics, or documents placed under it. Also called a desktop visualizer. These images can be broadcast in a one- or two-way video system and interchanged with the picture of the instructor.

DOM (Document Object Mode)

Within a computer, information is often organized as a set of "objects." When transmitted, it is swnt as a "document." The DOM is a W3C specification that gives a common way for programs to access a document as a set of objects.

Domain Name

A name (such as "w3c.org") of a service, Web site, or computer, and so on in a hierarchical system of delegated authority - the Domain Name System.

DOS

An acronym for Disk Operating System, the most popular operating system for Intel-based microcomputers. It is also referred to as Microsoft or MS-DOS after the company that developed it. (5) See Disc Operating System.

Double-Page Layout

A format the involves printing on both sides of the page, so that most of the time the reader sees both a left-handed and a right-handed page.

Downlink

The transmission of data from a communications satellite to an earth station. (5) A television dish used to capture signals off of a satellite transponder for distribution in a local area. (9) the transmission of signals from a satellite to an earth station (i.e., receiving dish). (10) A dish-shaped antenna used to receive signals transmitted from a satellite.

Downlink Dish

The dish and other associated electronic equipment needed to receive a signal from a satellite. The dish is either fixed on one satellite or electronically moveable for any satellite. Also called an earth station.

Download

In a computer network, the process of transferring a copy of a file from one computer, generally referred to as a central file server, to another, requesting computer. (5) The process of transferring (copying) data files from a main host computer to a smaller computer. It is the opposite of upload. (10) A procedure for transferring or retrieving a file from a distant computer and storing in on your own. Opposite of uploading.

Downtime

The time that telecommunications equipment is inoperable due to some type of malfunction.

Dramatic Incident

A role-play that portrays some type of incident. It can involve the use of theatrics. It is usally short and to the point. One group provides the dramatic incident while another group observes and rates. Discussion follows.

Dropout

The loss of a signal (picture) during an audio or video taped playback due to some typ of imperfection on the tape.

DTD

In the SGML world, a DTD is a metadocument containing information about how a given set of SGML tags can be used. In the XML world this role will be taken over by a schema.

Sometimes, but arguably, "document type definition." See also Schema.

Dual Band

Used to denote equipment and antennas capable of using both C-band and Ku-band signals.

Dub

To copy an audio or videotape from a master. It is also called a "dupe."

Dublin Core

A set of basic metadata properties (such as title, etc.) for classifying Web resources.

Duplex Video

Two-way video communication capable of simultaneous origination and reception.

DV

See Digital Video

DVI (Digital Video Interactive).

A proprietary format for placing digital video on a compact disc. Compressed files can provide full-motion video.

DYAD

Interactions between a pair of students.

Earth Station

A receive (downlink) or send (uplink) dish to distribute a television or data signal to or from a satellite transponder. (10) A ground-placed antenna used to transmit or receive signals to or from satellites, typically located in geostationary orbit.

EBT (Electronic Book Technology)

A company started by Andries Van Dam and others to develop hypertext systems.

Echo Cancellor

A device that blocks echo reflections during a conference while maintaining (apparent) full-duplex audio.

Economy of Scale

A population large enough that generates enough money to cover the actual costs of a telecourse

External Disc

An information storage unit housed outside of the computer.

EDI (Electronic Data Interchange)

A pre-Web standard for the electronic exchange of commercial documents.

Edit

To correct the accuracy of data found in audio, video, or computer data. To change the order or sequence of the data to more accurately reflect the intended message. Data can also be removed.

Education Quadrants

Education is categorized in four quadrants according to the time/place relationship of the instructor and the learner. The four quadrants are Same Time/Same Place, Same Time/ Different Place, Different Time/Same Place, and Different Time/Different Place.

Educational Television (ETV)

Programs dealing with educational topics. Usually passive, they teach about special interest areas. These can be broadcast live or distributed on videotape.

Edutainment

A synthesis of the interactive and entertainment capabilities of video games and direct instruction. It is highly interactive multimedia that synthesizes audio, video, and computing.

Electronic Blackboard

A pressure sensitive blackboard-like device through which writing is transmitted by telephone lines to distant sites and which can be annotated by participants at those sites.

Electronic Bulletin Board

A group e-mail or mailing list that allows all participants to post and read messages.

Electronic Learning

The student interacts with electronic media to learn a skill or topic. Examples include videodisc, compact disc, videotape, audiotape, etc.

Electronic Mail (e-mail)

The transmission of messages over a data communications network. (5) Computer terminals are used to add emotional expression to a text-based statement. (See also Smiley) (6) A general term referring to the electronic transmission, distribution, and delivery of messages. E-mail is characterized by storage of a message at an "electronic address: that can be received by the recipient via a telecommunication-equipped personal computer. Facsimile (FAX) transmission of messages operates in a similar manner, but is received directly rather than stored in a "host" computer until requested. (9) Messages stored and sent via a computer system.

Electronics

A signal produced through the movement of electrons through a gas, vacuum, or semiconductor.

E-mail

See Electronic Mail.

Emoticons

Also known as Smileys. These are symbols used to add emotional expression to a text-based statement. (See also Smiley)

Encryption

Making a message unreadable through distortion. A receiver must have a code to restore the signal to a form that is readable. This applies to computers and television signals.

Enquire

A 1980 program, names after the Victorian book Enquire Within upon Everything.

Enthusiasm

An excited, passionate, animated presentation that inspires and motivates.

Entry Level Skills

The skills and competencies brought to a course by a student. Material previously learned. Prerequisites needed prior to starting a course.

Environmental Scanning

A term used in planning that means engaging in activities to provide information outside of an organization or on the external environment.

Ergonomics

The study of people and their characteristics in relation to their working environment (furnishings, equipment, lighting, etc.). The objective of ergonomics is to develop comfortable and safe conditions so as to improve worker morale and efficiency. Ergonomics is especially important in designing facilities such as electronic classrooms. (5) The relationship between man and machines. It relates to operation, convenience, and physical well being of the operator. It is designed to minimize any discomfort and fatigue.

Eudora

A world-wide e-mail program that allows you to send and receive messages.

Evaluation

The process of determining the merit or worth or value of something; or the product of that process. The special features of evaluation, as a special form of investigation (distinguished, e.g., from traditional empirical research in the social sciences), include a characteristic concern with cost dimensions; and with the supporting and making of sound value judgments, rather than hypothesis testing.

Expectations

The learning performance objectives that a student is expected to master.

Export

Data is sent from one system (terrestrial or satellite) to another system located anywhere.

Extended Syllabus

A collection of course materials intended for student use, usually several chapters long, providing course objectives, assignments, instructions, readings, etc., allowing students to work through the course as independently as possible.

Extranet

A secure network that allows for the exchange of information between a group and its customers. An extranet might be set up, for example, as a means by which to register students for courses and provide them with ongoing information.

Extreme Close-Up

A video shot of the head only showing the head from the chin up.

Extreme Long Shot

A video shot in which the background is dominant. The instructor is barely seen against the background.

Extrinsic Motivation

Rewards are provided for student behavior that is desirable. The student is motivated more for the reward than the value of learning. These external motivators include grades, money, prizes, recognition, etc.

Eye Contact

The ability of an instructor to look at a television lens and nonverbally communicate with field-site students.

F2F

Acronym for "Face to face."

Facsimile (FAX).

A system used to transmit text and graphics over telecommunication channels. The original image is scanned at the transmitter, reconstructed at the receiving end, and duplicated on paper or stored on a personal computer. Facsimile transmission rates vary from analog Group 1, 2, and 3 faxes requiring five minutes, two minutes, and 20-40 seconds, respectively, to transmit a page, to digital Group 4 faxes, which transmit one page in three to six seconds. (10) A photocopy device transmitting printed material to distant sites through the use of telephone lines.

Faculty Development The process of improving the instructional effectiveness of faculty through training and an enhanced institutional support structure.

Fair Use

Fair use is a principle that provides for limited reproduction of copyrighted materials for purposes such as criticism, comment, news reporting, teaching, scholarship, and research. It is a limitation on the copyright owner's monopoly and may be applied only in certain circumstances.

FAQ

See Frequently Asked Questions.

FCC

See Federal Communications Commission

Federal Communications Commission (FCC)

The Federal Communications Commission established in 1934 to regulate the growing broadcast industry. It assigns and regulates broadcast frequencies and regulates interstate communications.

Feedback

Data is provided (fed back) to a student and instructor to inform them how much the student learned. These data also show how effective the teaching strategies and learning activities were in assisting the student to master the learning performance objectives.

Fiber Optic Cable

Thin filaments of glass or other transparent materials through which coded light pulses representing data, image, and sound can be transmitted for long distances by means of multiple internal reflections. Fiber optic transmission is characterized by extremely high transmission speeds and bandwidth. (10) Bundled glass rods that are extremely thin and flexible and are capable of transmitting voice, video, and data signals in either analog or digital formats. This is accomplished with very little loss in signal quality.

Fiber Optic System

Light beams such as laser that transmits huge amounts of digital messages over strands of high purity glass (fiberglass) or plastic at the speed of light (186,300 miles per second). Each fiber can carry from 90-150 megabits of digital information per second or 1,000 voice channels more than copper.

Fiber Optics

A term used to describe the method of transmitting and receiving light beams along an optical fiber that is usually made of a thin strand of glass. Fiber optics are destined to change radically the speed and nature of communications throughout the world. (9) the transmission of audio, video, and computer information in digital form using pulses of light through glass fibers.

Field Production

Television production made on location away from the television studio.

Field Site

Any location physically separated from the instructor's station for the purpose of receiving live or videotaped instruction.

File Server

A special computer that stores dedicated data such as pictures, slides, or video clips. It can be accessed by other computers to retrieve these data.

File Transfer Protocol (FTP)

A popular protocol used for transferring data files on the World Wide Web. (5) A major feature of the Internet. It is a means of accessing files that are stored on remote computer systems and downloading them onto your computer. This includes text, graphics, sounds, video, and multimedia.

Fill-In

The student writes key words and phrases in blank spaces as the instructor lectures. Used as heavy cues for the most important ideas.

Filtering

The setting up of criteria to select a subset of data from a broad stream of it. Filtering information is essential for everyone in daily life. Filtering by parents of small children may be wise. Filtering by others - ISPs or governments - is bad, and is called censorship.

Fire Wall

A security hardware/software package that separates a local area network into components; it is mainly used to prevent outsiders from gaining access to secured material/information. The firewall acts as a buffer between public

and private networks to ensure the security of the private networks; furthermore, it may be used within private networks.

Flaming

An angry response to a written statement over the Internet.

Flip Chart

An easel with bound paper that is flipped forward or back to record or reveal key teaching point. Most flip charts are not in the proper aspect ratio (3 x 4) for television presentation. If you must use a flip chart use only the top half.

Flop

Calculation per second.

Floppy Disk

A thin plastic plate, commonly 3.5 inch or 5.25 inch in diameter, used for storing digital information to be read by a computer. (10) A non-rigid magnetic disk in which data are stored.

Floppy Drive A device in a computer that reads information form a floppy disk (See Floppy Disk).

FO

Fiber optics. It uses laser transmissions for audio, video, and computing over glass or fiber cable. (/see also Fiber optic system)

Foamboard

1/4" - 5/8", 4" x 12' sheets of lightweight mounting board consisting of a lightweight sheet of open-cell foam sandwiched between two thick sheets of paper. It is very rigid yet easy to cut.

Focus

Sharpest possible focus in a lens.

Folder

A grouping or cataloging of file names that reside on a secondary storage device such as a disk. It is the same as a directory.

Folder

The ability to save e-mail messages to identified locations automatically. An instructor can set up a folder for a class and save all messages to and from students.

Font

A special typeface for numbers, letters, and symbols of any type. It is set in one weight and style of typeface. Examples are Helvetica, Palatino, Roman, etc. Strictly speaking, the collection of all characters making up a particular typeface, typestyle (e.g. roman, italic, bold, bold italic), and size. Increasingly, in colloquial use, font is synonymous with typeface.

Footer

Information placed within the bottom margin of each page of a document (with the possible exception of the first page).

Footprint

The terrestrial area capable of receiving a satellite signal. (10) The area of the earth's surface that can receive the signal of a given satellite.

Formative Evaluation

Evaluation conducted during the development or improvement of a program or product (or person, etc.). It is an evaluation that is conducted for the in-house staff or the program and normally remains in-house; it may be done by an internal or external evaluator or (preferably) a combination.

Formative Evaluation Measures

Measures that provide information to help refine, improve, or extend a program or process. The way data is specifically arranged on a document or in a file.

Frame

Refers to one complete video image of 525 horizontal lines that takes 1/30th of a second to show.

Frame Rate

The number of frames or images per second displayed on a video device. Thirty frames per second is the full-motion video standard. (5) The rate of speed that images are displayed per second on a video screen. Full motion video is displayed at the rate of 30 frames per second in the NTSC format.

Frame Store

A single frame of video is digitized and stored in computer memory for later retrieval. It has a very high resolution.

Frames Per Second

Also called frame rate. The frequency that video images or frames appear on the television monitor. Broadcast quality NTSC television consists of about 30 frames per second. Full motion video conferencing television is usually 1015 frames per second. At very low bandwidth such as T-1 (56 or 112 kilobits per second), there is not quite full motion and the picture can appear slightly out of sync.

Freeze Frame

That action of one frame of video is stopped and saved for later use.

Frequently Asked Questions (FAQ)

These are special files on any variety of topics where answers to the questions are archived. This is used on the Internet and the World Wide Web.

FTP

See File Transfer Protocol.

FTP (File Transfer Protocol)

Provides the ability to transfer files to and from remote computer systems on the Internet.

Full Duplex

Two-way simultaneous communication as opposed to simplex (one-way) or half-duplex (alternating) communication. In a two-site full-duplex videoconference, both parties can send and receive video, audio (and perhaps data) simultaneously.

Full Duplex

A telecommunications channel that allows two-way conversation simultaneously without one of the parties being cut off.

Full-Motion Video

Equivalent to broadcast television video with a frame rate of 30 frames per second. Images are sent in real time, and motion is continuous. (5) television images are sent and displayed in real time and motion is continuous. This is what you see on your home television set. It is not compressed (15-20 frames per second). You are viewing a standard video signal of 30 frames per second. A standard video signal capable of reproducing a full range of motion. (See Compressed Video). (10) Unlike compressed video signals (which tend to be blurry), full-motion video refers to high-quality signals, similar to what is received over a television set.

FYI

Acronym for "for your information."

Garbage In/Garbage Out

See Gogo.

Gateway

A specialized computer that connects two networks and translates addresses of one network so they can be read by the other network.

Genlock

A device that brings together (synchronizes) signals from a variety of sources for the purpose of mixing and recording video and computer signals.

Geostationary Orbit

An earth orbit located directly above the equator, approximately 22,300 mile above the surface. Satellites in this orbit rotate at the same relative speed as the earth itself. This allows earth antennas to remain fixed.

Gesticulate

Emphatic and expressive gestures with the whole body, hands, arms, or legs. It is done in an animated and excited manner.

GIF (Graphics Interchange Format)

A format for pictures transmitted pixel by pixel over the Net. Created by CompuServe, the GIF specification was put in to the public domain, but Unisys found that it had a patent in the compression technology used. This stimulated the development of PNG.

GIGA

One billion.

GIGO

An acronym for garbage in - garbage out. Reference is to data input and output of a computer.

GILC (Global Internet Liberty Campaign)

A group that has been laudably vocal in support of individual rights on the Net (though occasionally tending to throw out the baby with the bathwater).

Glitch

Problems in an electronic device that is sudden and often unexplained.

Glossary

(a) In a document, a list of new or unfamiliar terms (often technical), with their definitions. (b) In some word processing programs, a function that permits the storage and easy recall of frequently-used text or graphic material.

Gopher

A database communications protocol used for locating data files on the World Wide Web.

Grabbers

Attention-getting techniques at the beginning of a teleclass. They can include newspaper headlines, news clips, statements, or pictures.

Graphic Analogy

A visually reinforced analogy. These use artifacts, magic tricks, puppets, etc.

Graphical User Interface (GUI)

The graphic display of software options in the form of icons and pictures that can be selected, usually by pointing device such as a mouse. It is considered a feature of user-friendly software such as that provided with the Macintosh operating system, Microsoft Windows, and many application software packages.

Graphics

Two- or three-dimensional images, typically drawings or photographs. See also GIF, PNG, SVG, and VRML.

Groupware

Software designed to allow groups of colleagues to organize their activities. The group must be connected electronically, whether it be through the Internet, an intranet, or an extranet. The software usually facilitates such things as scheduling meetings, and allocating resources; it also facilitates e-mail, telephone utilities, file distribution, and password protection for shared documents.

GUI

See Graphical User Interface.

H.320 Standard

A widely used video compression standard that allows a variety of videoconferencing systems to communicate. This standard was approved by the International Telecommunications Union (ITU).

Hacker

A user who illegally enters another computer or network with the intent to do some type of harm.

Hairy Arm Teaching A male arm writing notes under a document or overhead television camera. The arm tends to be the focal point. The student blindly copy notes.

Half-Duplex

A communications method where one end transmits while the other end receives, then the process is reversed. A communications channel over which transmission and reception are possible, but only in one direction at a time.

Hand-Held Computer

A small portable computer capable of being used (held) in one hand.

Handout

Information ancillary to regular class text material that is provided to a student. It includes activities, exercises word pictures, pictures and graphics.

Hands-On

The process of directly manipulating equipment to learn special functions. This refers to a real-life experience rather than a didactic experience.

Hang-Up

Posters, sayings, anecdotes, pictures, statements, or graphic word pictures hung on the wall and referred to throughout the telelesson. If used on interactive television, it must be in a 3 x 4 aspect ratio.

Hard Copy

A printed output in readable form. It can be in black and white or color.

Hard Disk

An inflexible disk sealed in a module. Used to store electronic data.

Hard Drive A rigid non-removable disk in a computer and the drive that houses it. Hard disks store much more data and access it much more quickly than floppy disks.

Hardware

The physical components of a system used to transmit, store, and receive information. Examples include the physical components of computer and communications systems.

Headend

The electronic control center that receives and transmits all electronic signals for an institution.

Header

The initial opening of a video or film that contains essential information and credits. Information placed within the top margin of each page of a document (with the possible exception of the first page).

Headroom

The amount of room from the top of the instructor's head to the top of the television monitor.

Hertz (Hz)

A unit of frequency equal to one cycle per second.

High Definition Television (HDTV)

A new television technology that will provide viewers with a much clearer picture of 525 horizontal lines. It will have the quality of 35mm slides. A new television viewing set will be required.

High Sierra

A name for a popular data format for CD-ROM.

Highlight

To stand out by using CAPITALS, underlining, italics, or color.

Hologram

A three-dimensional graphic.

Home Page

This is also known as a Web Page. This is a first contact with an individual or organization on the Web. This is the specific Web page that loads when a browser is started. It is a collection of data that promotes and describes the capabilities of the individual or group. The WWW consists of millions of these pages. It can include text, graphics, video clips, and sound.

Horizontal

Opposite of vertical. Units of length across rather than top to bottom. Refers to 3 x 4 aspect ratio required for television graphics.

Host

A computer on a network that can receive information from another computer. (9) A large computer (mainframe) that stores and relays information from other computers in a network.

Host System

This is a public-access system that provides Internet access to people outside the research and government community (Thornburg, 1991, p. 185).

Hot Text

Another term for anchors.

HTML

See Hypertext Markup Language. (5) (Hypertext Markup Language) Used to access the World Wide Web. All documents must be written in this language for transmission over the WWW. (6) A computer language for representing the contents of a page of hypertext; the language that most Web pages are currently written in.

HTTP

See HyperText Transfer Control Protocol. (6) A computer protocol for transferring information across the Net in such a way as to meet the demands of a global hypertext system. Part of the original design of the Web, continued in a W3C activity, and now a HTTP 1.1. ETF draft standard.

Hue

The basic color of light in varying combinations. These include red, green, and blue.

HyperCard

Course authoring software developed and distributed by Apple Computer, Inc.

Hyperlearning

A term coined in Perelman's book, *School's Out: Hyperlearning, the New Technology, and the End of Education* (1992). It means that teaching and learning are fused and transformed into the concept of hyperlearning. Machines help humans to learn and humans help machines to learn. There is no "school" (p. 27). This idea goes beyond artificial intelligence.

Hyperlink

A connection among documents in a hypermedia or hypertext format.

Hypermedia

A computer-based information retrieval system for accessing sound, text, images, graphics, or video in a nonsequential or nonlinear format. (5) "An early version, 'hypertext', provided the ability for multidimensional cross-referencing and indexing of word-based information libraries. Add multimedia pictures, movies, sounds of speech, music, and so forth to the library and hypertext becomes hypermedia." (Perelman, 1992, p. 43). (See also Multimedia) (6) An approach to information storage and retrieval that provides multiple linkages among elements. In interactive multimedia instruction, it allows the learner to navigate easily from one piece of information to another. (9) the storage and retrieval of text, images, audio, and video in computer (digital) form.

Hypertext

A computer-based text and document retrieval system that can be accessed in a nonsequential or nonlinear format. (6) nonsequential writing; Ted Nelson's term for a medium that includes links. Nowadays it includes other media apart from text and is sometimes called hypermedia.

Hypertext

The linking of information together by highlighting key words that have been marked up creating paths through related material from different sources such as footnotes and encyclopedias. It is the ability to present connected documents.

Hypertext Markup Language (HTML)

Software language used to establish data files for access in the World Wide Web. (5) A special formatting language that tells a Web browser how to show that various parts of a Web document.

Hypertext Transfer Control Protocol (HTTP)

The most commonly used protocol on the World Wide Web. It runs in conjunction with TCP/IP.

Hz

Hertz. A unit of frequency equal to one cycle per second.

I/O Input/Output

This refers to the entry and retrieval of data rather than processing it.

Icebreaker

Used at the beginning of a teleclass to allow the students to get to know each other both at the origination site and at each of the field sites.

Icon

A small on-screen graphic that represents a group of actions. An example is a wastebasket used to represent the deletion of a file. A small, simple graphic which is imbued with its assigned specific meaning.

ILS

See Integrated Learning System.

Image Bank

This is a local, regional or wide area network resource of compressed digital still pictures, graphics, and video clips, available for a small cost to download and store or print at the receiver's site.

Image Graphic

A detailed line or halftone (shades of gray) graphic. These can be found in general magazine graphics and hard copy or electronic clip art.

Imaging

A reflection on how an instructor wants to be perceived and the actions that can be taken to move oneself towards this image.

Indentation

Text laid out so that the first line of each paragraph begins to the right of the remainder of the lines in the paragraph; opposite of outdentation.

Inference

A conclusion drawn from known data.

Information Highway

The Internet. The interconnection of computers worldwide with the capacity of transporting audio, video, and data.

Information Service

Generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information in electromagnetic, digital, or optical form that may be conveyed via telecommunications technologies.

Information Space

The abstract concept of everything accessible using networks: the Web.

Information Superhighway

Descriptive term for the Internet.

Information Technology

The merger of high speed computers, television, telephone, and fax.

Inload

Part of an instructor's regular teaching load. This is usually 9 hours (3courses) for graduate faculty and 12 hours (4 courses) for undergraduate faculty.

Input/Output

Abbreviated as I/O. Information is out into something and acted upon in some way. The modified data is then output.

INRIA (Institut National de Recherche en Informatique et Automatique)

The French national research laboratory for computer science and control. Co-host of W3C and developers of Amaya.

Insert Edit

A short segment if video that is "inserted" into a live or videotaped production.

Instructional Design (ID)

A systematic approach to developing instruction both live and mediated. This includes a statement of course and lesson terminal learning performance objectives; assessment if these objectives by any means; selection of teaching/learning strategies based in the objectives; and feedback to both the student and instructor to determine to what degree the objectives were mastered and how well the selected teaching and learning strategies worked.

Instructional Designer

A highly trained specialist who takes subject matter and designs it around measurable objectives. Usually requires a terminal degree.

Instructional Development

The cyclical and systematic process of designing, developing, evaluating, and revising instruction.

Instructional Strategy

This a teaching strategy that includes how the instruction is delivered (the physical delivery: Lecture, correspondence, television, computer, etc.). It also includes the means by which the instructor communicates in the classroom such as active, passive, questioning, etc.

Instructional Systems Approach To Teaching (ISAT)

This procedure is composed of terminal and intermediate learning performance objectives, assessment, feedback, teaching strategies, and learning activities.

Instructional Television (ITV)

Television used for direct classroom instruction both live and videotaped. It is highly visualized and interactive. A student handout should be provided for each telelesson. Also called interactive television.

Instructional Television Fixed Service (ITFS)

Instructional television service that operated over a limited or fixed geographic area using a microwave transmitter. Special receiver antennae are required by the students to access the microwave transmission. (5) A narrowcast television channel, given to nonprofit institutions such as colleges and universities. These require special send/receive dishes. (6) Microwave-based, very high frequency television used primarily in education. Receive sites must have a converter to change signals to those used by the television receiver. Capable of full-motion video and one-way audio over distances of up to 35 kilometers

Instructor-Centered

The focus in a teleclassroom is on the instructor while teaching. This takes place between instructor and student(s) and media such as programmed instruction or computer-assisted instruction.

Integrated Learning System (ILS)

A single computer package for delivering instruction that combines hardware, software, curriculum, and management components. It is usually supplied by a single vendor.

Integrated Services Digital Network (ISDN)

A high-speed (128 kilobits per second) data communications network evolving from existing telephone services. (2) A digital network that provides communications of voice, video, and data between desktop videoconferencing systems, and computers. (3) An ITU recommendation for providing an internationally accepted standard for voice, data, and signaling over the public switched telephone network (PSTN). ISDN lets telephone companies provide services to homes over already-existing telephone wires, thereby conserving their extensive investment in wiring to the home. Bandwidths include: BRI (144 kbps) and Primary Rate: (PRI (1.544 and 2.048 Mbps). ISDN requires central switch hardware and software upgrades and doesn't run on all existing wiring. (6) Telecommunication networks that are capable of accepting all types of information (i.e., voice, data, facsimile, full-motion video, videotext) in a common digital code and transmitting it as if it were one signal. Provides end-to-end digital connectivity for simultaneous transmission of all types of information according to accepted international standards. Often referred to as a "universal network" able to support any device for transfer of information.

Interaction The communication or dialogue that occurs between instructors and learners or among learners. May be time-delayed (asynchronous) or real-time (synchronous). Examples of asynchronous interaction include correspondence, voice mail, and computer E-mail. Synchronous interaction can occur by telephone, audioconferencing, videoconferencing, and Internet telephony.

Interaction

The mutual reaction of the learner to the computer's actions and vice versa.

Interactive

Operating in an interactive or back-and-forth mode. It refers to user and machine dialogue or interaction in which both are active participants in a process.

Interactive Educational Telecommunications System

Two-way synchronous communication such as audio, video, computing, print, and combinations of these.

Interactive Study Guide (ISG)

A special student guide composed of displays. It is a teleclassroom student learning management tool. Word pictures within individual displays provide a conceptual structure of the presentation. In many instances students are required to fill in key words and phrases. The ISG can be used before, during, and after class activities.

Interactive Television

Instructional television that is highly visualized and interactive (teacher/student, student/teacher, student/media) and requires students to participate in specially designed activities. It is highly student-centered.

Interactive Video

Combining computer and video technologies to provide for an active video environment in which users can control and select options based on a given application. Interactive video is a major advancement over other video technologies such as film and television, which are considered passive.

Interactivity

The property of requiring active participation by the learner for instruction to proceed.

Interface

The point at which two components meet. With computers, it is used for both hardware, when two physical devices connect to one another, and software, when two programs work with one another. It is also used to refer to points where people connect to computer devices such as with graphical user interfaces. (6) A connection between a user and a piece of equipment or between two pieces of equipment.

Internet

The networks of networks that provides the basic protocol standard for allowing data communications systems to link themselves together throughout the world. (6) the name for the network connecting education and research networks throughout the world. (7) A global network of networks through which computers communicate by sending information in packets. Each network consists of computers connected by cables or wireless links. (9) the global computer network that interconnects all other networks using a common telecommunications protocol (TCP/IP).

Internet Relay Chat (IRC)

Computer software that allows multiple parties to participate in synchronous (same-time) communications on the Internet.

Intranet

In data communications, the adoption of the standard Internet protocol and software tools for a local network or establishing a mini-Internet within a local system. (5) A private network within an organization that uses a common password. (7) A part of the Internet or part of the Web used internally within a company or organization. (8) A private Internet operating within an organization. Both require the same network protocols and both use e-mail and World Wide Web standards for communication.

IP (Internet Protocol)

The TCP/IP standard protocol that defines the IP datagram as the unit of information passed across an Internet and provides the basis for connectionless, best-effort packet delivery service. IP includes the ICMP control and error message protocol as an integral part. The entire protocol suite is often referred to as TCP/IP because TCP and IP are the two most fundamental protocols. (7) The protocol that governs how computers send packets across the Internet. Designed by Vint Cerf and Bob Khan. (IP may also stand for intellectual property; see IPR).

IPR (Intellectual Property Rights)

The conditions under which the information created by one party may be appreciated by another party.

IRC

See Internet Relay Chat.

ISAT

See instructional systems approach to teaching/training.

ISDN

See Integrated Services Digital Network. (5) Integrated Services Digital Network. A set of standards to establish a common architecture for the transmission of digital signals including audio, video, and computing over existing telephone lines. (9) A digital telecommunications channel that allows for the integration of voice, video, and data using a signal line.

ISG

See Interactive study guide.

ISO (International Standards Organization)

An international group of national standards bodies.

ISO-9660

The most commonly used format for recording data on CD-ROM discs.

ISP (Internet Service Provider)

The party providing one with connectivity to the Internet. Some users have a cable or some sort of wireless link to their ISP. For others, their computer may dial an ISP by phone and send and receive Internet packages over the phone line; the ISP then forwards the packets over the Internet. (8) A company that provides access to the Internet for a monthly fee.

Iterate

To repeat a series of steps in an operation until the desired results are more and more closely approximated.

ITFS

See Instructional Television Fixed Services. (5) Instructional television Fixed Service. Transmission of a television signal up to a twenty-five mile radius. It operates on microwave usually for educational purposes. (See also Instructional Television Fixed Service) (9) Television channels that use high frequency channels and microwave transmission to broadcast over a 20 - 30 mile distance (line of sight). (10) a band of low-power microwave frequencies set aside by the Federal Communications Commission (FCC) exclusively for the transmission of educational programming, and licensed to public institutions. ITFS is typically used in urban area and requires a specialized antenna. Receiving sites require a converter capable of changing signals to those used by a standard television set.

ITV

Instructional or interactive television. (See also Instructional television)

Java

An object-oriented programming language that attempts to operate across software platforms. (7) A programming language developed (originally as "Oak") by James Gosling of Sun Microsystems. Designed for portability and usability embedded in small devices, Java took off as a language for small applications ("applets") that ran within a Web browser.

Javascript

A programming language similar to Java that generally operates with World Wide Web browser software.

Jigsaw

Open source Web server of great modularity, written in Java. From W3C and friends.

JPEG

Joint Photographic Expert Group. This is a means of compressing and storing video and high-resolution color pictures. It is the standard for data compression of all still images. (See also MPEG) (7) this group defined a format for encoding photographs that uses fewer bytes than the pixel-by-pixel approaches of GIF and PNG, without too much visible degradation in quality. The format (JFIF) is casually referred to as JPEG.

K

Kilo or 1000.

Kb

The abbreviation for kilobyte or 1024 bytes.

Keio University

Near Tokyo, Japan. Cohost W3C.

Key Word

A main or key idea presented as part of a telelesson. These are usually single words or phrases used by the instructor in a word picture format. They are reduced to a small black and white graphics and placed in a display in an interactive study guide.

Kilohertz (kHz)

One thousand cycles per second by which data is transmitted.

Knowbot

These are knowledge robots capable of searching for new information based on the criteria set by a user.

Ku-Band

A special way to transmit (uplink) a television signal to a transponder in a satellite for the purpose of distribution to multiple downlink sites. They are less expensive and more available than C-band. (See also C-band) (6) the band of microwave uplink frequencies from 12 to 18 GHZ. Band of satellite communication frequencies from 11.7 to 12.2 GHZ. Ku-Band transmission requires one meter satellite receiving dish whereas the C-band dish spans a minimum of three meters. (9) A relatively new transmission frequency in the 12-18 GigaHertz range used for satellite transmission that uses smaller diameter receiving dishes (one meter). (10) A type of satellite transmission of a higher frequency than C-Band transmissions, and requiring smaller antennas.

KWIC

Keyword-in-context. Preselected words are used as the basis of categorizing information. The context in which the word is used is taken into consideration.

LAN

See Local Area Network. Local Area Network. Computers within a defined area are interconnected so that they can communicate with each other and share databases. The computers are physically interconnected. (6) Two or more computers connected by means of a physical connection (wire, line-of-sight radio signal, or fiber-optic cable). (9) Computer networks in a single building or campus connected via coax or fiber-optic cable.

Laptop

A type of portable computer that can easily be used by resting it on one's lap. (5) A small, under 6 pounds, computer about 2 inches thick. Highly portable.

Laserdisc

An optical disc used to store video images and associated audio or sound information in analog format. Same as videodisc.

LATA (Local Access and Transport Area)

A geographic region in which a regional Bell Operator company is allowed to provide long distance services. Long distance calls placed between two or more LATAs require the involvement of an interexchange, long distance carrier, such as Sprint, AT&T, MCI, or GTE.

Lavaliere Microphone

A small microphone on a chain or clip. It is wired or wireless. The purpose is to free the hands of the speaker.

Layout

The design or layout of a television graphic in the proper 3 x 4 aspect ratio. The visual plan for a poster, display, montage, or publication. (6) The arrangement of text and non-text elements on a page.

LCD

See Liquid Crystal Display.

LCS (Laboratory for Computer Science)

A laboratory at the Massachusetts Institute of Technology. Cohost of W3C.

Lead (Live Early Adoption and Demonstration)

A W3C policy to eat our own cooking to find out how it can be better.

Leading (Rhymes with wedding)

The vertical space between lines of text. Typefaces are designed so that there is a certain amount of vertical space between adjacent lines. The amount of space between lines can be increased by increasing the leading (literally, in days of lead type, by inserting strips of lead between lines) to increase legibility when lines are long.

Learner-centered

The type of teleteaching which focuses first on learning objectives and then how it will be taught. This is highly interactive learning.

Learning

The observable change of behavior or attitude in a student that is a result of a learning experience. Good teaching causes learning.

Learning Activity

Ways in which students are involved in their own learning either alone or with small groups.

Learning Contract

An agreement between a student and instructor of what and how to master learning performance objective(s). The contract is either given to a student, negotiated, or developed by the student and approved by the instructor.

Learning Performance Objective (LPO)

Clear and precise statement of exactly what the student is expected to learn and do at the completion of a course and at the end of each class.

Learning Resource Center (LRC)

An area housing multimedia instructional materials.

Lectern

A small stand that is slightly angled from which a lecture is given. It may contain a microphone.

Lecture

A discourse on an academic topic given before a student audience. It is usually passive in the part of the students.

Lecture Organizational Patterns

The ways that an instructor organizes his/her lecture presentation. There are approximately 17 different patterns such as description, definition, information, cause/effect, etc.

Legibility

Ease by which letters and numbers can be read.

LEO

See Low Orbiting Satellite.

Letter Size

The size of upper case and lower case referred to as points. The minimal point size for television is 24.

Letter Style

The variations of a typeface in weight or slant-regular, italics, outlines, or bold.

Levels of Learning

Intellectual levels of cognitive learning performance objectives. The levels are hierarchical and cumulative, moving from lowest to highest level of learning. These levels include recall of data; comprehension; application of individual principles; to critical thinking in which appropriate rules and principles are selected to solve a problem. This is an adaptation of Bloom, 1956.

libwww

The library (collection) of WWW-related program modules available for free use by anyone since the start of the Web.

Light Table

An area that is backlit in order to illuminate 35mm slide or overhead transparencies. The light table is under the document of desktop camera.

Line-Mode

In high and far-off times, people did not see computer programs through windows. They typed commands on a terminal, and the computer replied with text, which was displayed on the screen (or printed on a roll of paper) interleaved with the commands, much as though the person were in a chat session with the computer program. If you have seen a "DOS window" then you have some idea of how people did their communicating with computers in those days, before they learned how to drag and drop. Line-mode is still a very respectable way to communicate with a computer.

Line-Mode Browser

A Web client that communicated with the user in line-mode and could run all kinds of computers that did not have windows or mice.

Line-Of-Site

Point-to-point transmission with nothing in between to block the signal such as hills, buildings, etc.

Link

These are connections of links to additional information in a document or file at different locations on the Internet worldwide. A link lets you arrange pages in a Web site nonsequentially. Links can be underlines, colored, or use simple graphics. When you click on a link, the Web browser jumps to that page as the link's destination. Links are the foundation for hypertext.

Link

A reference from one document to another (external link), or from one location in the same document to another (internal link), that can be followed efficiently using a computer. The unit of connection in hypertext.

Liquid Crystal Display (LCD)

A way to make letters and numbers appear on a crystal display surface as seen in pocket calculators and computers. The LCD can also project video images from an overhead projector.

Listserv

An e-mail program that allows multiple computer users to send and receive messages on a single system. Listserv software is frequently used to administer electronic bulletin boards.

Listserv

A special interest discussion group that corresponds via e-mail. A predetermined group exchange messages in an area of shared interest. A message is posted on a list server and is automatically sent to all members of the group. A listserv is different from newsgroups in that an individual must subscribe (sign up) to participate in a listserv group.

Live Video

Interactive television which is conducted in real or actual time rather than through videotape. It can be in full motion or compressed.

Local Area Network (LAN)

Connecting computer equipment using data communications over a limited geographic area such as a room, building, or campus. (5) Computers within a defined area such as a single building or a campus are interconnected for conferencing. (See also Wide Area Network)

Log

A high-level programming language developed by Seymour Papert in 1968. It is a very popular programming language for teaching young children to use a computer.

Log On/Log In

This is a connection to some type of host system.

Logging On

Connecting to a computer network, typically through the use of a personalized identification code.

Logistics

Moving instructional materials, such as handouts and homework, between the instructor or an origination site and students or field-sites.

Logo

Computer language developed by Seymour Papert, describes as a tool for developmental cognitive learning.

LOL

Acronym for "Laughing out loud."

Long Shot

A video camera shot that shows the entire instructor against the background. The background is prominent.

Loose-Leaf Binding

A method of "binding" that involves placing pages into rings (often three) fastened between covers.

Low-Earth Orbit Satellite (LEO)

A non-geostationary satellite that orbits the earth at a height ranging between 400 to 800 miles. Termed a Smallsat, LEOs weigh from 75 to 400 lbs and due to their proximity to earth, their receive and transmit terminals require relatively little power. Since LEOs orbit close to the earth they cover only a small area of the earth's surface, and many satellites are required to provide global coverage. Present systems propose from 12 to 77 low-earth satellites for seamless worldwide coverage.

Lumen

A unit of light that describes its brightness.

Mainframe

Large computer systems capable of processing extensive amounts of data and of controlling many peripheral devices. (9) A large computer with a lot of storage and processing power.

Mainframe Computer

A large, relatively complex computer. Its capacity exceeds that of minicomputers and microcomputers. (10) A large, relatively complex computer. Its capacity exceeds that of minicomputers and microcomputers.

MARC Record

A standard for machine-readable library catalogue cards.

Market Analysis

An essential part of the strategic planning process. It considers the basic assessment of the general educational market as well as a more specific course and curriculum market analysis. Demographic and social factors for each geographic area are gathered and analyzed as to their impact on the proposed distance education project.

Market Niche

A specific segment of a well defined market that needs a product and is willing to purchase.

Marketing

The ability to identify a specific target market for a product and sell to that market.

Master

The original source of data including audio, video, computing, print, and combinations of these. Duplicates are made from the master.

Materials Evaluation (Instructional Products)

Evaluations that assess the merit or worth of content-related physical items, including books, curricular guides, films, tapes, and other tangible instructional products.

Media

The plural of medium. Defined as the symbol systems used to communicate and convey messages and information, including the text in books and newspapers, sound in radio transmissions and images on television or in a film. A means by which an instructor communicates by sending messages. These include audio, video, computing, print, and combinations of these. Media are mechanical, human, and electronic.

Media Distribution System

A computer-based system that integrated several media sources (videotape, videodisc, computer, document camera, etc.) and is able to distribute them to selected output devices.

Medium Shot

A television shot with most of an object or person in the picture. In the case of television, the shot would be from the waist up.

Meet-me Bridge

A device that links callers together in an audioconference. A single telephone number is provided to the callers; conferences can call this number from anywhere to join the conference.

Mega

(M) One million.

Megabyte

One million bytes or one thousand kilobytes. (See also Bytes)

Megahertz (MHz)

One million cycles per second.

Memory

The capacity of a computer to store data internally and externally.

Menu

A presentation of options available that a user can select or request from a program. Menu-driven software anticipates user options and presents them in the form of lists or icons. A term used in computing. A list of available functions to be selected by a cursor.

Merge

To bring together different sets of data into one file.

Meta-

A prefix to indicate something applied to itself; for example, a metameeting is a meeting about meetings.

Metaphor

A figure of speech in which one thing is compared to another as if it were the other object. The comparison is intrinsic as opposed to an analogy in which the comparison is extrinsic. An example of a metaphor is, "He was a lion in battle." An analogy would be, "He is like a lion when he approached the enemy."

MEU (Mind Extension University)

A distance education offering of Jones Intercable, a cable television company. MEU provides courses offered by 24 participating universities and colleges via satellite to more than 600 cable networks.

MHz

Megahertz or one million cycles.

Micro Teaching

A short 5 to 15 minutes lesson that is videotaped. It exemplifies a specific teaching strategy such as silence, nonverbal communication, or questioning. After taping, the instructor, with an instructional consultant, reviews the tape and critiques the success of the teaching strategy. The lesson is then retaught, retaped and re-reviewed with the consultant.

Microchip

A silicon wafer or chip with thousands and tens of thousands of electronic components and circuit patterns.

Microcomputer

A small computer system that usually utilizes one central processing unit, The Apple Macintosh and IBM PC/PS are among the most popular microcomputers ever manufactured. (6) A computer based on a microprocessor (an integrated circuit or chip) and intended for one user; includes IBM and IBM clones, Apple and Macintosh, and Tandy products, among others. (10) A computer with a microprocessor chip-based processing unit. Microcomputers are the original personal computers that many people use at home and at work.

Microcosm

"The exploding capacity to create, transmit, and transform with technologies that become exponentially smaller and smaller, faster and faster, cheaper and cheaper, and ever more prolific and universal." (A term used by George Glider and quoted in Perelman, 1992, p. 28).

Micropayments

Technology allowing one to pay for Web site access in very small amounts as one browses.

Microprocessor

A central processing unit used for most microcomputer systems capable of being integrated on a single chip. (6) A silicon chip (integrated circuit) with a pattern of transistors and related devices that do the basic work of computing.

Microsoft Explorer TM

A graphical interface used to surf the WWW.

Microwave

An electromagnetic wave used in telecommunications transmissions and includes telephone, fax, video, and computing. Microwave signals only travel in straight lines for about 30 miles at which time they must be amplified. This is the primary frequency type for sending and receiving data from satellites. (10) High-frequency radio waves used for point-to-point and omnidirectional communication of audio, data, and video signals. Microwave frequencies require direct line of sight to operate. Obstructions in the path usually distort or block the signal.

Mid-Level Networks

Also called regional networks; network service providers (many created by the National Science Foundation) distribute network services to universities, research laboratories, colleges, and schools in their service area.

Mindcraft

The creation and marketing of knowledge. It is the intellectual property or software created for use in making knowledge out of data. "The mindcraft economy will replace degrees and diplomas with precise instruments that certify attainment of competency." (Perelman, 1992, p. 73).

Minicomputer

A computer designed to support multiple users like mainframes, but with less capacity. (10) A small digital computer typically relying on more than a single processor chip. A minicomputer is larger than a microcomputer but smaller than a mainframe.

Minimal Constraint, principle of

The idea that engineering or other designs should define only what they have to, learning other aspects of the system and other systems as unconstrained as possible.

Miniaturization

Reduction of electronic equipment in physical size but with the same efficiency.

Mips

Millions in instructions per second. This is a measure of the speed of computer performance.

Mission

A self-imposed goal or purpose of an institution from which all administrative objectives and goals are derived.

Mission Statement

A short, yet comprehensive statement of the purpose of the project. It allows all team members, customers, administrators, etc., to know what ultimate intent or result is intended. Normally, a mission statement is further explained and supported by goals and objectives that address specific areas of focus with time and qualitative achievement expectations. These anticipated accomplishments can then be compared with actual levels of achievement.

MIT (Massachusetts Institute of Technology)

See LCS. Cohost of W3C.

Mixed Methodologies

Courses that combine media and delivery methods. This could be an "on-line" course that uses textbooks with assigned reading, online chat sessions, web references sites with self-paced tutorials, and audio bridges. Work assignments usually submitted by e-mail, and/or posting to a web page that is created by the learner and maintained on the school's server. There may even be face-to-face components via video and/or physical presence.

Mixer

Used to bring together many wired or wireless audio microphones and smooth the sound out so that it is heard at the same auditory level.

Mobile Devices

Pagers, phones handheld computers, and so on. All are potentially mobile Internet devices and Web clients.

Modem

An abbreviation for computer-managed instruction. The computer is used to record data and prescribe a learning sequence. See Modulator-demodulator. (5) An abbreviation for modular-demodulator. The transmission of digital data, usually computer, over copper or fiber optic lines. It allows digital data to be transmitted over analog transmission facilities like standard telephone lines. (6) A modulator/demodulator that translates a computer's digital information into analog for transmission on a telephone line. (9) A device that allows computers to send and receive information over conventional (analog) telephone lines. (10) Equipment that convert digital signals into analog signals for purpose of transmission. Modems are typically used to link computers via telephone lines. Short for modulator-demodulator.

Modulator-Demodulator

A data communications device used to convert computer digital signals into a telephone frequency or analog signal and vice versa.

Montage

A picture composed of many different pictures or parts of pictures, sayings, words, graphics, and poems. It is composed around a single theme.

MOOs (MUDs OBJECT-ORIENTED)

This allows for live synchronous interaction through a host site where students log on simultaneously. It allows for immediate and spontaneous interactions.

Morphing

One clear image is transformed (morphed) into another in front of your eyes through the use of digital technology.

Mosaic

A Web browser developed by Marc Anderson, Eric Bina, and their colleagues at NCSA. A mouse-driven graphical browser interface used to surf the WWW.

Mouse

A hand-held input device electronically connected to an on-screen pointer used to communicate with a computer.

Moving-Hand Teaching

When teaching over interactive television, the instructor selects a passive teaching strategy and writes notes under the television camera for most of the telelesson. The student sees primary a hand writing words and numbers that must be copied.

MPEG

Moving Pictures Experts Group. Motion JPEG. An internationally recognized multimedia digital video compression standard designed to save bandwidth. (See also JPEG).

MPEG-1

The standard of compression for moderate quality pictures. It has moderate transmission speed. It is becoming the standard for CD-ROM and low-end television applications.

MPEG-2

The compression standard for high-quality pictures with fast transmission speed. This is becoming the standard for high definition television (HDTV) applications.

MPEG-3

A separate compression standard for HDTV, which has now been folded into the MPEG-2 standard.

MPEG-4

The compression standard for low-quality pictures (slow transmission speed), being developed for portable computing and other applications where picture quality is not of paramount importance.

MUD (Multi-Use Dungeons/Domains).

This is a virtual world in which you can interact with other participants in real time. Generally text-based, more and more visual material is being used.

Multicast

To transmit information to a group of recipients via a single transmission by the source.

Multimedia

Combining sound, text, images, animation, and video. With computers, it refers to a variety of applications that utilize CD-ROM, videodisc, and audio equipment. (2) Refers to a combination of audio, video, and/or computer technologies that provide a range of expression and experience. (5) Evolved from hypertext and hypermedia. It is synthesis of computer, television, telephone, and/or fax through the computer. The integrated use and display of visual images, motion, sound, data, graphics, and text, with the user being able to interact creatively with the display. (See also Hypermedia).

Multiplex

The act of combining input signals from many sources onto a single communications path, or the use of a single path for transmitting signals from several sources (Sippl, 1990).

Multiplexor

A data communications device used to control many or multiple messages by funneling them into a smaller number of communication lines or ports. (9) A device used to combine telephone or video signals from different sources into a single channel.

Multipoint

An audioconference, data conference or videoconference among more than two parties; videoconferences are usually voice activated which means only the speaker's video is presented.

Multipoint

A telecommunications signal (audio, video, computing and print) is distributed to a number of field-sites simultaneously. It can be delivered live or packaged as self-contained videotapes and study guides.

Multipoint Conferencing Unit (MCU)

A device that allows three or more sites to interact actively during a video teleconference. Each site must connect to an audio bridge.

Multipoint Control Unit (MCU)

Device used to link remote sites into a single conference call or to manage several simultaneous, independent conferences (segmenting). Typically used in videoconferencing.

Multipoint Videoconferencing

See Videoconferencing.

Mute

Remove or stop sound.

Nano

One billion.

Nanosecond

One billionth of a second.

Narration

The verbal part of a presentation from which visuals/graphics are derived. The narration is accompanied by visual materials.

Narrowband

A low-capacity communications circuit that is capable of transmitting data at speeds of up to 56,000 bits per second. (2) Refers to a low-capacity communications circuit that usually has a speed of 56 Kbit/s or less. (5) Lower level frequency signals such as the telephone (3000Hz) or radio signals (15,000 Hz). It implies a speed of 56 Kbps.

Narrowcast

A scrambled signal distributed to a target audience which must have special equipment to receive and descramble it. (6) Video signal delivery to a targeted audience at pre-determined receive sites, in contrast to open-air broadcast signal transmission to the general viewing public.

NCSA (National Center for Supercomputing Applications)

A center at the University of Illinois at Urbana-Champaign whose software development group created Mosaic.

Needs Assessment

The process or technique by which it is determined that telecourses or programs are needed, desirable, and fiscally viable in a clearly defined geographic area. New distance education programs are sponsored based on the data derived from this needs assessment.

Nelson, Ted

Coiner of the word hypertext; guru and visionary.

Net

Another way of referencing the Internet. (7) Short for Internet.

Net Surfer

Any user that browser around the Internet.

Netiquette

This is the etiquette used during communications on the Internet. (8) Contraction meaning Internet Etiquette. These are the guidelines for etiquette in the posting and sending of messages to online services and to Internet news groups. Netiquette not only covers rules for maintaining civility in interactions but also guidelines unique to the electronic nature of forum messages. For example, the special formatting of text is discouraged because some people would not be able to see the special formatting.

Netscape Navigator TM

A graphical interface used to surf the WWW. Probably the most popular browser.

Network

A group of computer devices connected by a data communications system. Two major types of networks are local area networks (LANs) and wide area networks (WANs).

Network

Computers are electronically grouped for the purpose of data exchange. (a) A series of points connected by communication channels in different geographic locations. (b) The switched telephone network is the network of telephone lines normally used for dialed telephone calls. (c) A private network is a network of communication channels confined to the use of one customer. (8) A group of two or more computers linked together electronically. (10) A configuration of two or more computers linked to share information and resources.

Networked (Web-based)

Currently limited by bandwidth. Can be mitigated by use of distributed disks that hold memory intensive files. Live video is the biggest problem in networked synchronous training.

Networked Virtual Learning Environment

Simulated educational activities and structures that so closely match the real event that they seem almost real or give students the feeling of actually "being there." For example, instructors and students who meet and collaborate only electronically are not really in a classroom together. However, a well-designed virtual learning environment can use the power and flexibility of communications technologies to simulate or substitute for many of the aspects of classroom instruction.

Networking

The connection of multiple sites for the transfer and/or exchange of information via computers.

Neutral Networks

Neutral nets are systems with recognition capabilities sufficient to learn from experience and patterns are examined (Heterick & Gehl, 1995, January/February, p. 24). "These 'thinking machines' made of silicon and wire the simplest brain's architecture of nerve connections. (They) promise to further increase the power of computers to recognize visual, sound, and other complex patterns in the way that living sensory organs-like eyes and ears- do" (Perelman, 1992, p. 32).

Newsgroup

This is a discussion group on Usenet. There are thousands of topics available. A newsgroup is similar to the listserv but is open to the public worldwide, rather than by subscription as in a listserv.

NeXT

Name of the company started by Steve Jobs, and of the computer it manufactured, that integrated many novelties such as the Mach kernel, Unix, NeXTStep, Objective-C, drag-and-drop application builders, optical discs, and digital signal processors. The development platform I used for the first Web client.

NNTP (Network News Transfer Protocol)

A protocol that defines how news articles are passed around between computers. Each computer passes an article to any of its neighbors that have not yet got it.

Node

1. The main idea or key word/phrase of a presentation, which is shown in a geometric shape as a graphic (See also Word picture). 2. Any terminal or station within a computer network. (10) An origination or reception site. Thing joined by links. In the Web, a node is a Web page, any resource with a URI.

Noise

Electronic interference on a transmitted signal. It is exemplified by a snowlike pattern or picture break on a television set or static in an audio signal.

Non-traditional Education

Education that is other than instructor centered, instructor led, face-to-face education.

Notebooks

A very lightweight portable computer, usually weighing less than ten pounds, that can be easily carried under one's arm.

Notecopying

The student spends most of the class time copying words and numbers off of a television screen. It is associated with a talking head, moving hand, or shiny ring teaching. There is little or no visualization or interactivity.

Notetaking

The student takes notes by filling in key words or phrases shown in word pictures. Copying and extensive writing are minimized. Most important ideas are cued and prompted through the fill-in.

NTSC National Television System Committee.

One of several technical format standards developed for television transmission and reception.

NTU (National Technology University)

A graduate level and technical seminar program headquartered in Fort Collins, Colorado. NTU transmits engineering and technical courses from more than 45 colleges and universities via satellite facilities to more important needs to be met.

OIC

Acronym for "Oh, I see."

Omnidirectional Microphone

A microphone that can pick up voice over a range of 360 degrees.

On line

Being in direct communication and/or transfer or exchange of information.

On-Demand Telecommunications System

Used only when required. This is opposed to the idea of a totally dedicated system that is available 24 hours a day.

One-Way Live Video

This is often referred to as "broadcast distance education." This was popularized in the 1950s by programs such as Sunset Semester. This form of education is used primarily by Public TV and can also be augmented by other forms of pre-recorded media.

One-Way Video

A video signal is received at a field-site. The student can see the instructor but the instructor cannot see the student. There is two-way audio (telephone) between the instructor and the students at field-sites. Students can communicate via a telephone bridge among the sites and between the instructor and sites. (10) An interactive conference class, or meeting in which the distant participants view the conference leader through a video link. Two-way audioconferencing is used for real-time verbal interaction.

Online

The ability of computers to communicate with one another through a modem usually over a telephone line - copper or fiber optic.

On-Site

Refers to the origination site where the instructor is located and from which the television signal is distributed to all field-sites.

Open Source

Software whose source code is freely distributed and modifiable by anyone. W3C sample code is open source software. A trademark of Opensource.com.

Optical Disc

A video or audio laser disc. (6) A videodisc or compact disc that reflects a light beam to read information from the surface of the disc.

Optical Scanner

An input device for reading a page or photographic image into a computer.

Optical Scanning Device

An input device that uses light sensors to scan paper documents and convert images into digital format. Optical mark readers and optical character readers are types of optical scanning devices.

Originating Site

The location from which a teleconference originates. (10) the site initiating the telecommunicated conference or meeting.

Origination Site

Read-only memory that cannot be changed or erased.

Outdention

Text laid out so that the first line of each paragraph begins to the right of the remainder of the lines in the paragraph; opposite of indention.

Overhead Television Camera

The television camera that picks up the graphics and any notes written in real time by the instructor. The camera can be located in the ceiling or connected to a platen situated at the instructor's desk.

Overload

A teaching load in addition to the regularly assigned teaching load.

Ownership

Refers to the ownership of a telecourse. This could include either the instructor or sponsoring institution. It also refers to ownership of the copyright of the telecourse.

Pacing

The speed by which the instructor speaks during a telepresentation. This usually means fast for review and slower as new information is introduced.

Packaged Telecourse

A course made available completely on videotape, audiotape, CD's, and print material. It is self-contained, self-directed, and self-correcting. The student(s) work independently of the instructor.

Packaging

To develop a self-contained telecourse that is self-paced, self-directing, and self-correcting. The student completes the course at any location off of the main campus. Students can interact with the instructor through telephone conference calls, e-mail, and voice mail or by visitations to the main campus.

Packet

A grouping of data, typically up to 512 characters in size, which usually represents one transaction. A packet is always associated with an header and control information. The term "packet" is usually used to refer to a Layer 3 data unit in X.25. An "envelope" of digital information sent as a single unit on a wide area network (WAN). A unit into which information is divided for transmission across the Internet.

Packet Switching

A communications data transmission method that breaks down messages into smaller units called packets which are individually addressed and routed through a network; the network link is occupied only during packet transmission. Packet switching increases efficiency in transport. Contrast with circuit switching.

PAL

The European standard for scanning television signals. A PAL videocassette cannot be played on American video recorders.

Palmcorders

The smallest 1/2" video recorder that can fit in the palm of your hand. The maximum length of video recording is 20 minutes. It requires an adaptor for VCR play back.

Pan

Television camera movement from left to right. Short for panorama.

PANS

"Pretty amazing new stuff."

Parabolic Dish

A bowl-shaped antenna that focuses incoming signals on a single point for ground transmission.

Paradigm

A way of looking at things; a point of view; a model of how to go about solving and implementing something.

Partial Understanding

The ability to understand part of the import of a document that uses multiple vocabularies, some but not all of which are understood.

Passive Learning

The student is viewed as a receptor or vessel ready to be filled with knowledge. The instructor speaks as the student listens and takes notes. Students frequently miss the key points of a lecture.

Passive Viewing

The code that is used to gain access to a locked system. It usually uses an alphanumeric combination.

PC

Personal computer. (9) an affordable desktop or laptop computer used at home, office or school.

PDA

See Personal digital assistant.

Performance-Based Instruction

Designed to develop specific skills and learning outcomes that are specified before the instruction begins.

Peripheral

Any device external to the main computer in use but capable of input or output to it. Examples include printers, plotters, CD-ROMs hard drives, etc.

Personal Digital Assistant (PDA)

A combination of computer, telephone, fax, and computer, probably wireless that is carried by a person.

Personal Signature

The presentation image of the instructor. The persona of the instructor when teaching over television.

PGP (Pretty Good Privacy)

An e-mail security system that uses public key cryptography and has the philosophy that individuals can choose whom they trust for what purpose - the "web of trust."

Physical Delivery

The electronic equipment used to deliver instruction and other data. Examples include the Internet and the Information Super Highway.

Physical Involvement

The student is asked to do something physically such as stand up, put the right hand up, take out a wallet, etc. This is meant to make a point and create a more relaxed environment.

PICS (Platform for Internet Content Selection)

A very neat bit of mathematics on which is based a security system in which there is no need to exchange secret keys; instead, people have one "private" key that only they know and one "public" key that everyone knows.

Picture Phone

Telephone equipment that can send and receive slow-cam pictures via standard voice grade telephone circuits.

Picture-In-Picture (PIP)

A small picture of something appears on the television monitor. (See also Corner insert).

Pixel

Short for picture element. A point on a grid such as a video screen that represents a single dot of light. Text and images are developed by manipulating many pixels. The picture cell that is the smallest single displayable video dot that can be addressed on a computer display screen. A display screen is divided into rows and columns that is made up of small dots, cells, or pixels. The quality of the resolution of a picture is determined by the number of pixels in the display.

PKI (Public Key Infrastructure)

A hierarchy of "certification authorities" to allow individuals and organizations to identify each other for the purpose (principally) of doing business electronically.

Planning Models

Conceptual structures that provide a means for the comprehensive development and understanding of relationships associated with a distance education project. Such models often include a graphic depiction of key components and their relationships.

Plant A student at a field site is asked to respond to a question prior to a teleclass. The student has been given the answer. The purpose is to motivate other students to respond.

Platform

The computer operating system.

Playback

The replay of a video or audiotape.

Plug-in

A dynamic computer code module that performs a specific task that generally is made available or functions with World Wide Web browser software.

PNG (Portable Network Graphics)

A format for encoding a picture pixel by pixel and sending it over the Net. A recommendation of the W3C, replacing GIF.

Point

A measurement of length used in typography, equal to 1/72".

Point Form

A method of laying out lists of text items, such that items are below one another, in outdented form, usually preceded by a bullet.

Point-To-Point

Transmission of a television signal via microwave from point A to point B line-of-sight. There cannot be any blockage of the signal between the origination and receive site.

Point-to-Point Videoconferencing

See videoconferencing.

Port

Access to a computer for the input or output of signals. It is a jack on the back of a computer to connect peripherals.

Portable Computer

Any computer designed to be carried and moved about. Laptop, notebook, and hand-held computers are examples of portable computers.

Portfolio Assessment

An alternative to traditional testing that requires students to compile a portfolio of material (papers written, creative works developed, log of relevant activities, etc.), which is used to assess student accomplishment in a course of study.

Positive Image

An instructor's view of how they look, sound, and move during television teaching. A positive image of oneself creates high self-esteem and personal confidence.

Post

Putting a message up on a Usenet and then sending it for others to review.

Post Production

After a master videotape is made, graphics, visuals, music or captions are added. This becomes the edited master tape.

POTS (Plain Old Telephone System)

The analog public switched telephone system. (5) Plain Old Telephone Service that is analog.

Powerpoint TM

A presentation graphics package in wide use produced by Microsoft TM.

PPP

Acronym for Point-to-Point Protocol. Provides router-to-router and host-to-network connections over synchronous or asynchronous circuits.

Pre-Recorded Media

As media developed, so did the use of media in correspondence course. Printed material was augmented with pictures, audio recordings, and videotapes. The latest form of media transfer is Compact Disc.

Pre-Test

An assessment of student capability before instruction begins to determine to what degree the learning performance objectives have already been learned.

Primary Rate Interface

The ISDN equivalent of a T-1 circuit, delivers 23B channels and a D channel (North America) or 30B channels and a D channel (Europe) running at 1.544 Mbps per second and 2.048 Mbps per second respectively.

Proctored Examination

An examination whereby the learner is supervised by a proctor. In distance application, proctors could be teachers or administrators who are selected by the learner and approved by the distance education institution. An alternative is for the learner to travel to a regional site sponsored by the distance education institution to take the final examination.

Professional Inventory

An inventory of instructor support services to design quality telelessons.

Program Evaluations

Evaluations that assess activities that are funded for a defined period of time to perform a specific task. Some examples are a three-day workshop on behavioral objectives, or a three-year career educational demonstration project. A key distinction between a program and a project is that the former is expected to continue for an indefinite period of time, whereas the latter is usually expected to be short lived. Projects that become institutionalized in effect become programs.

Project Report

Students complete a project and draft a report based on a research study or solution of a problem presented to them instead of a final examination.

Prompt

The student is cued to a correct response by pointing, nodding, or use of other body language.

Prop

Any type of portable device or artifact that is shown with the instructor as s/he teaches on television. These could include artificial flowers on the desk, a ficus tree in the background, or background 35mm slides.

Protocol

A general term for a set of rules, procedures, or standards used to exchange information in data communications. Examples of these rules include a code or signal indicating the beginning of a message, a code or signal indicating that a device is busy with another task. Computer manufacturers have established various protocols for exchanging information on their equipment. (5) A formal set of rules or procedures by which computers communicate with each other and transfer information. Standard protocols allow different types of computers and software programs to communicate with each other. For example, HTTP (hypertext transfer protocol) is the system used by the WWW to transfer data. (7) A language and a set of rules that allow computers to interact in a well-defined way. Examples are FTP, HTTP, and NNTP.

Psychomotor Manipulative skills of fine and gross motor coordination. One of the three domains of learning.

Public Domain

Unprotected intellectual property that was never registered with the Copyright Office. Intellectual property for which the copyright has run out. Anyone can use this material without permission.

Public Policy

Values that broadly define the social climate in which public opinion prevails in the form of laws, executive orders, and judicial decrees. It operationally describes such intellectual abstractions as social responsibility, diversity, privacy, and freedom of speech.

Public Television (PBS)

Nonprofit educational and special interest television. Public financial support for programming is provided.

Pull Cards

Printed in TV format and contain graphics, word pictures, or statements. They are placed on a tripod and pulled off of the tripod to reveal the next card as the telelesson progresses.

Radio

Communications over a distance by converting sounds into electromagnetic waves and radiating them through space. In Webster's dictionary: the wireless transmission and reception of electrical impulses or signals by means of electromagnetic waves.

Radio Frequency (RF)

These are electromagnetic signals that have a range from radio microwave in length.

RAM

An acronym for random access memory. The RAM provides temporary storage for data and program instructions. It is operating memory as opposed to storage memory. (9) the memory component of a computer that is used to temporarily store data and programs while processing, measured in bytes. Volatile memory used by a microprocessor.

RBOC

Regional Bell Operating Company.

RDF (Resource Description Framework)

A framework for constructing logical languages that can work together in the Semantic Web. A way of using XML for data rather than just documents.

Real-Time

To transmit a telecommunications signal live to multiple receive sites. Real time also refers to any type of computing device that can collect and analyze data about an event as quickly as an event occurs. (6) The condition in which communication is synchronous, i.e., live. (8) Audio and video that is broadcast and received with very little time delay. (10) An application in which information is received and immediately responded to.

Receive Site

The location at which a teleconference is received. (10) All sites, other than the originating site, participating in a telecommunicated conference or meeting.

Receive -Site Equipment

The equipment at any location designed to receive a telecourse. This equipment usually includes a color television monitor, videotape recorder, fax, telephone(s) or an audioconferencing unit, telephone lines, and a downlink dish.

Reconfiguration Guidelines

Modify a traditional course for delivery via telecommunications. This primarily involves the use of correlated handouts, high levels of visualization, and student involvement activities at field sites.

Redundancy

Duplication of key equipment components at an origination or receive site for immediate and automatic replacement in case of breakdown. The purpose of redundancy is to reduce the possibility of system shut down.

Reflective Practitioner

Someone who is aware of the key issues in his or her professional area, who continues to inquire into the policies and practices that shape working experiences, and who recognizes that by reflecting on practice he or she can improve and develop professional competence.

Regulations Laws, executive orders, and judicial decisions coming from legislative actions at the local, state and federal levels, from decisions made by government officials empowered to make such decisions, or from municipal, state, or district level court decisions.

Reliability

The consistency of a response or output.

Remote

An on-location production away from the main studio or teleclassroom.

Repurposing

Using graphics, pictures, or video that has already been produced for another program. Reusing existing content.

Resolution

Sharpness and clarity of a television picture on the monitor.

Resource-Based Learning

"The use of educational resources (films, videos, textbooks, CBT software packages, computer databases, etc.) to facilitate learning, especially of a self-directed nature. In order that resources are available electronically, a massive amount of digitization has to take place..." (Mason, 1994, p. 135).

Response System

Individual students can respond electronically to comments and questions proposed by an instructor by pushing a number or letter on a small hand held device that is wired or wireless. The resulting data is compiled and presented to the instructor as an average of the student responses.

RF

Radio frequency.

RGB

Red, green, and blue. The primary colors mixed on a television and computer screen.

Role of Media in Distance Education Media permit the educator to bring the sights and sounds of the real world into the learning environment. It is important to be as realistic as possible when new information is presented.

ROM

Read-only memory that cannot be changed or erased.

Room System

A videoconferencing system, designed to be used by multiple people at one time. Also referred to as a group system. Contrast with personal conferencing system.

Router

An intermediary device in a communications network that accepts and routes messages from one link (I.e., LAN) on the network to other links. This is a special purpose software package that connects two or more networks. The computer housing the router looks at the destination addresses of the packets through them. (6) A specialized computer used on a network for storing addresses of network hosts, communicating with other routers, and passing packets.

Royalty Sharing

Money is accrued through the sale or lease or telecourses. These monies can be shared with the instructor and institution or all monies go to the institution as a condition of employment.

RPC (Remote Procedure Call)

When one part of a program calls on another part to do some work, the action is called a procedure call. RPC is a set of tools that allow you to write a program while different parts are on different computers, without having to worry about how the communication happens. A generic technique, not a specific product.

RS-232

Standard interface for a serial connection to a computer (usually used to connect modems).

RSA

A public key encryption system invented by Ron Rivest, Adi Shamir, and Leonard Adleman. RSA algorithms have been patented, and so its inventors have licensed its deployment.

Rule of Thirds

Refers to the layout of television graphics. A graphic is divided vertically and horizontally with two lines each. The points of intersection of each line is one-third. These are the points of greatest visual interest. (See also Center of interest).

Runaround

Inserting a graphic (sometimes irregularly shaped) in the midst of text, requiring that the lines of text be laid out around the graphic. Hence the graphic is called a runaround.

Same Time/Different Place

The instructor and classroom are "wired" to be transmitted to other locations. The most effective form of this education is full use of audio and visual multi-media. However, it can be just audio (such as phone-bridge) or conducted via web (using "chat rooms"). Interaction and feedback does occur between instructor and the learners. The amount and type of interaction and feedback that occurs depends on the link used. I.E. It is tough to read "body language" of the learners over an audio link.

Same Time/Same Place

Traditional Education. The instructor and learner are located in the same place at the same time. Multi-media and computer-based learning can occur in this quadrant of education. However, this is most often thought of as face-to-face, didactic learning. The number of hours spent in this time of learning are often referred to as "contact hours." An advantage to this type of education is that communication and feedback are immediate and personal. A disadvantage to this type of education is that the instructor and learners have to travel to a central learning place at the same time.

Sans-serif

Without serifs.

Satellite

An earth orbiting device capable of receiving and delivering telecommunications (audio, video, and computing) signals through a transponder to and from a designated area over long distances called a footprint. (See also Telecommunications). (10) An earth-orbiting device used for receiving and transmitting signals.

Satellite Footprint

A geographic area covered by signals transmitted from a satellite.

Satellite Ground Receiver

A downlink dish designed to capture (receive) a signal from an orbiting satellite.

Scanner

A device that converts graphic or text material (on paper or similar medium/ into an electronic equivalent suitable for manipulation by a computer.

Schema

(pl., schemata) A document that describes an XML or RDF vocabulary.

Search Engine

Software that provides keyword and other search facilities for locating information on the World Wide Web. Examples include Yahoo, Lycos and Alta Vista. A tool used to search the Internet for information. It searches a defined database. A word or phrase is entered on a search engine and a number of "hits" will appear. Different search engines use different search strategies. By clicking on the term, you will be brought to that Web page.

Self-Assessment

The student checks his/her own progress towards mastery of the stated learning performance objectives. The student accepts responsibility for his/her own learning. Participates in what and how to learn and when he/she should be assessed. This could be in the form of a learning contract.

Semantic Web

The Web of data with meaning in the sense that a computer program can learn enough about what the data means to process it.

Semiconductor

Usually made of silicon (sand) for the purpose of moving electrons in some way.

Separation of Form From Content

The principle that one should represent separately the essence of a document and the style with which it is presented. An element in my decision to use SGML and an important element in the drive for accessibility on the Web.

Serif Perpendicular finishing strokes in the ends of lines forming characters.

Server

A regional repository for specialized electronic information in audio, video, and computing formats and for w-mail. It is accessed by client computers within a region. (6) A computer with a special service function on a network, for example, receiving and connecting incoming telephone calls, or managing traffic from more than one computer to a printer or modem. (7) A program that provides a service (typically information) to another program, called the client. A Web server holds Web pages and allows client programs to read and write them. (8) A computer or device on a network that manages network resources. For example, a file server is a computer and storage device dedicated to storing files. Any user on the network can store files on the server. A print server is a computer that manages one or more printers, and a network server is a computer that manages network traffic. A database server is a computer system that processes database queries. Servers are often dedicated, meaning that they perform no other tasks besides their server tasks. On multiprocessing operating systems, however, a single computer can execute several programs at once. A server in this case could refer to the program that is managing resources rather than the entire computer. (9) A computer in a network that serves the role of handling transmissions among other computers in the network.

SGML (Standard Generalized Markup Language)

An international standard in markup language, a basis for HTML and a precursor to XML.

Shelf-life

The longevity of a telecourse in terms of semesters or years before it is discontinued, erased, or modified. This is determined by individual faculty or at the department level. Two important variables are production cost and validity of the subject matter over time.

Shiny Ring Teaching Finger rings worn by an instructor when writing notes under a television camera. These notes are then copied by students. The rings shine in to the lens and are the visual focus of the picture - often too distracting.

Shtick

A Yiddish word that means prank. It means an attention-getting technique.

SIG

See Special Interest Group.

Signal

The transmission of analog or digital data by any means.

Silence

After a question is asked the instructor should remain silent for 3-5 seconds. (See also wait time).

Silicon Chip

This is a silicon wafer for the storage of electronic circuits.

Simile

A figure of speech in which two things are briefly and explicitly compared. A short analogy.

Simplex Video

One-way video communication capable of origination and reception, though not simultaneously.

Simulation Software

A form of software used to represent a real-life situation on a computer.

Simulators

Simulators range from part task to high-end "full mission" simulators. DNV has recommended standards for classification. Fidelity and realism are factors in determining usefulness of simulators in training and competency assessment. Simulators are relatively high cost. However, simulation provides experimental learning.

Single-page Layout

A format that involves printing on only one side of the page. The reader sees only a series of right-hand pages.

Site

These are related pages on a Web server. A site is entered through a home page.

Site Facilitator/Coordinator

The person located at an off-campus field-site. Levels of responsibility include clerical only, administrative, audiovisual coordinator, or instructional aide with an undergraduate degree in the area taught.

Slip

Serial Link Internet working Protocol. This along with PPP are protocols that make the computer active on the Internet and WWW.

Slow-Scan

A method of sending visual data, e.g., graphs of picture images over phone lines. Picture quality is adequate for some education uses but not comparable to commercial TV. (9) A method for transmitting video images over telephones lines (also referred to as freeze frame or still video transmission).

Slow-scan Video

A method of capturing and transmitting a still video image through standard telephone lines. Also referred to as a freeze-frame and still-video.

Small Group Facilities

Groups of 4-7 students that work together at both the origination site and attempt to solve a problem or complete a task as assigned by the instructor. These activities are accomplished synchronously or prescribed in a videotape.

Smart Environment

Everything that you touch or touches you is endowed with intelligence. The embedded computers not only help people to learn but they participate in the learning process (Perelman, 1992, p. 28).

SME

See Subject Matter Expert.

SMIL (Synchronized Multimedia Integration Language)

A language for creating a multimedia presentation by specifying the spatial and temporal relationships between its components. A W3C recommendation.

Smiley

These are also known as emoticons. They are graphic symbols used in place of the voice to add emotion to words. Examples include :-) = happy, :-(= unhappy, :-(= upset, :O = shocked, :'-(= crying, :/ = skeptical ; -) = wink, :- X = speechless, : - & = tongue-tied, :-@ = laughing, :-D = laugh, :/ = smirk, :> = grin, :< = very sad, :O = surprised.

Socratic Method

A method of critical inquiry and instruction used by the Greek philosopher Socrates that relies on the ability to develop questions and elicit responses from students to arrive at conclusions.

Software

Computer programs and instructions that direct the physical components (hardware) of a computer system to perform tasks. (5) The logic programs that run a computer to carry out specified functions.

Sound Bite

A short audio only or audio video piece that is catchy and is designed to grab the attention of the viewer/listener.

Sound Capture

Term used for converting analog sound into a digital file.

Speakerphone

A special voice-activated telephone with built in speakers that allow a number of people to speak with participants at several other sites.

Special Effects

Graphic effects that can be created by a computer or special effects generator to create a television image that cannot be shot by standard methods. Examples include fades, wipes, dissolves, and animation.

Special Effects Generator

An electronic device to produce wipes, inserts, split screens, corner inserts, etc.

Special Interest Group (SIG)

Individuals get together in synchronous or asynchronous time to share mutual interests in a topic.

Speech Synthesis

Producing spoken words from computer-generated or controlled equipment.

Spreadsheet

The generic name for software designed to enter, edit, label, and manipulate arithmetic data in columns.

Stage Fright

Excessive fear of speaking before an audience. It is expressed as nervousness in the form of shaking, getting ill, sweating, or diarrhea.

Still-Frame Storage Device

An electronic unit that isolates and digitally stores a single frame of video for later use.

Stimulus Variation

Changing teaching strategies periodically (10-15 minutes) to maintain interest of the students. An example would be to conduct a lecturette with an overhead projector and blackboard, ask questions, and prescribe small group activities.

Storyboard

A detailed outline of the visual and auditory part of a video production. It is like the telelesson plan.

Storyette

A very short story.

Storyline

This is the theme of a story that has a transition to a key teaching point. All of the detail of a story is build around the storyline.

Storytelling

Use of a story or anecdote to introduce, reinforce, or summarize a key teaching point. There must be a transition from the story to the key teaching point that can be immediately identified by the student.

Strategic Planning Process

A comprehensive and structure process for planning the design and accomplishment of a particular mission or project.

Structured Notes

A detailed traditional narrative outline of a lecture. Key words and phrases are left blank to be filled in by the student as the presentation progresses.

Student Reference Manual

A student learning guide that provides directions to the student as s/he progresses through a telecourse. It is similar to a traditional course syllabus bit contains more detail.

Student Study Guide

See Study Guide.

Student-centered Learning

An approach to teaching and learning that puts the student in the center of the instructional process.

Study Guide

A student handout which is a learning management tool. It can be used by a student before, during, and after a teleclass. Copies of all graphics are shown on the television screen. Each graphic is numbered in a display for reference by the student.

Style

An abbreviation for typestyle. Common typestyles include roman (or plain), italic, bold, bold italic, outline, and shadow.

Style Sheet

(a) Originally, a sheet containing all specifications for type and layout of a given document. (b) An electronic equivalent of the original definition, incorporated as part of a word processing or page layout program on a computer. (7) A document that describes to a computer program (such as a browser) how to translate the document markup into a particular presentation (fonts, colors, spacing, etc.) on the screen or in print. See also CSS, XSL, separation of form from content.

Subject That which is familiar in an analogy.

Subject Matter

The content or body of knowledge, attitudes, and values that makes up a course and is to be learned by the students.

Subject Matter Expert (SME)

The instructor-of-record in a telecourse. (See also Content expert).

Subnode

A key word in a word picture that is part of an attribute of a main node.

Subordinate Heading

An inferior heading; one that comes below (is a subset of) a superior heading.

Summative Evaluation

The end of course or program assessment of teaching and learning. Evaluation conducted after project completion for the benefit of some external audience or decision-maker (e.g., funding agency, or future possible user), though it may be done by either internal or external evaluators or a mixture. For reasons of credibility, it is much more likely to involve external evaluators than is a formative evaluation. (See Formative Evaluation).

Summative Evaluation Measures

Measures that provide information that tallies or sums up what has occurred in a program or process.

Super Video Graphic Adapter

A top-level screen standard with 800 by 600 pixels. Resolution can go as high as 1024 by 768 pixels.

Supercomputer

The name for the largest and fastest computers.

Superhighway

The transmission of audio, video, and computing electronically in any combination and any where in the world. It is the Internet.

Superordinate Heading

A superior heading; one that comes above (is a superset of) an inferior heading.

Support Services

This is assistance provided to faculty in the design and development of telecourses for distance learning. Examples include instructional design, graphic services, secretarial assistance, logistic support, editorial, photography, and television production.

Surfing

Wandering through or changing around different channels or stations on television, or visiting various Web pages in the Internet.

SVG (Scalable Vector Graphics)

A language for describing drawings in terms of the shapes that compose them, so that these can be rendered as well as possible.

SVGA

See Super Video Graphics Adapter.

S-VHS/Super VHS

This is higher quality videotape with better resolution and less noise than the standard VHS. Switched Circuit. A circuit that may be temporarily established at the request of one or more stations.

Switched Network

A network which allows any site connected to it to communicate temporarily with any other site connected to the same network. When a videoconference is conducted over a switched network, connections are made by "dialing" the other parties in a manner similar to that in which normal phone calls are made.

Synchronous

A communication is real time that is not time-delayed. This includes live television, telephone, and radio. Happening at the same time. Synchronous communication for instance, is characterized by time-dependence, that is, the sender and receiver communicate at the same time. An example is a telephone conversation. (4) At the same time. (9) Communication in which interaction between sender and receiver takes place simultaneously (e.g., telephone or teleconferencing. (10) A system in which regularly occurring events in times intervals are kept in step using some form of electronic clocking mechanism. A term that refers to communication in which interaction between the sender and the receiver is not delayed. (8) A type of communication in which those communicating do so at the same time. An example is a chat room where people are all typing at the same time.

Synchronous Communication

An interaction between individuals or groups that occurs at the same time, that is, with no appreciable delay between the end of one message and the beginning of another. Face-to-face, telephone, and video teleconference conversations are synchronous.

System

A group of interrelated parts assembled to achieve some common goal or end. The three major components of most systems are input, process, and output. Examples of systems include computer systems, ecological systems, economic systems, political systems, and school systems.

System Speed Analog, or "twisted pair" networks are limited to 1,000s of feet. High speed systems are defined as capable of exchanging millions of bits per second (BPS). Medium Speed systems are defined as capable of exchanging 128,000 to 256,000 BPS. Low speed systems are capable of exchanging 56K BPS or less (typical of modems).

Systematic Process

Instructional Systems Design (ISD) is generally accepted as the systematic process that should be used in the design of instruction. The Coast Guard requires Train-The-Trainer courses be based on ISD. There are generally accepted to be five phases (Dick & Carey, 1996) in the ISD process. Those phases are: Analysis, Design, Development, Implementation, and Evaluation (ADDIE). This is often referred to as the "ADDIE" model. The factors considered during the analysis and design phases include: learners, content, methods & media, environment, technology available, and the context in which it (content) will be taught.

T.120 Standard

A standard that supports audiographics and desktop conferencing between platforms. Standards-based systems support desktop conferencing, application and document sharing, and collaboration. (3) A family of proposed international standards for audiographics conferencing. T.120 includes standard for multipoint as well.

T1

A dedicated digital circuit that uses a broadband data communications to provide high-speed transmissions of data at the rate of up to 1.5 million bits per second.

T-1 Transport

A digital signal that transmits 1.54 megabits/second of data. This is equal to 24 telephone lines (copper). This is a stage of compressed (partial motion) video. It is used for very high quality videoconferencing.

T-3 Transport

This is full-motion video as seen on your home television receiver.

Talking Head

A close-up (shoulder-up) of an instructor who talks at the student audience with minimal interaction. There is no or minimal use of visualization.

Tangle

A program I wrote for playing with the concept of information as consisting only of the Connections.

Target Population

The specific group of students with somewhat similar backgrounds and needs for which a course is designed.

Taxonomy

A cumulative and hierarchical intellectual classification scheme. It moves from lowest to highest levels of cognitive complexity. Usually refers to Benjamin Bloom's Taxonomy of Education Objectives.

TBC

See Time-Based Corrector.

TCP (Transmission Control Protocol)

A computer protocol that allows one computer to send the other a continuous stream of information by breaking it into packets and reassembling it at the other end, resending any packets that get lost in the Internet. TCP uses IP to send the packets, and the two together are referred to as TCP/IP.

TCP/IP

See Transmission Control Protocol/Internet Protocol.

Teaching Strategy

The methods to both deliver the instruction physically and the techniques of communication used by the instructor such as active or passive learning.

Team Effort

The instructional support personnel that work with an instructor to produce a high quality telecourse. Team members usually include the instructor, with support in instructional design, graphics, photography, editorial, and secretarial. Librarians functioning as team experts on the World Wide Web are also emerging.

Technobabble

Using words and phrases with a technology base. They are often ponderous, pompous, and frequently inaccurate.

Technology

This is the hardware or physical delivery system by which messages are transmitted and distributed. The technology is the pipeline through which messages are sent in a variety of media. Technologies include such things as radio broadcasting, television broadcasting, telephone companies, cable television companies, etc. Technology is different than media. The media, or messages are in the form of books, graphics, video, or audio.

Technology infrastructure

The digital networking facilities needed to deliver data, audio, and video signals at high speed and high capacity reliably throughout an organization or defined area.

Teleclass Teaching

Teaching electronically by audio (telephone or radio), video, computing, or print and in combinations of all four. The students are physically separated from the instructor by any distance.

Teleclassroom

The origination point for a telecourse. This area can contain computers, television, audio, and print support. The teleclassroom usually contains some students.

Telecom

A communications domain described by George Gilder and described in Perelman (1992, p. 34) as information files as light, through space or along wires—once metal, now evermore glass.

Telecommunications

The electronic transfer of data from one location to another. This includes audio, video, computing, and print and combinations such as voice (telephone) and fax, computer, telephone, etc. (10) the process of transmitting or receiving information over a distance by any electrical or electromagnetic medium. Information may take the form of voice, video, or data.

Telecommuting

Working at home and connected to work anywhere in the world by computer.

Telecomputer

A digital synthesis of television, graphic, computer, and voice capabilities.

Teleconferencing

The use of electronic channels to facilitate communication among groups of people at two or more locations. Teleconferencing is a generic term that refers to a variety of technologies and applications. Technologies include but are not limited to POTS (plain old telephone service), ISDN, satellite, Internet local area network/wide area network

(LAN/WAN), T1, and DS-3. Applications include but are not limited to telemeetings, telecollaboration, telecommuting, distance education, and teletraining. This definition is from the International Teleconferencing Association (ITCA). (3) Two or more people at two or more locations to visually and/or aurally interact with each other through the use of electronic communication. (5) A meeting of participants who are physically separated by any distance. They are joined electronically by means of one- or two-way satellite transmitted video, telephone, computers, fax, or combinations of all of these. It saves time and money. (6) Bringing people together by electronic means (audio, audiographics, video, and computer). Audio teleconferencing permits different individuals in the conference to speak to one another. Video teleconferencing can be one-way video with two-way audio or fully interactive with two-way video and two-way audio. Computer teleconferencing connects individuals computers to a host computer for asynchronous conferencing (not in real time) or synchronous conferencing that connects computers and users to each other in real time. (10) Interactive communication among people at two or more locations using telecommunication. May involve audio, graphics, computer, or video communication.

Telecourse

A course designed to be delivered in real-time or packaged electronically via audio, video, computing, or print, or in any combination of these. (9) Courses in video format that are delivered via television or videotape.

Telelecture

An instructor conducts a lecture through an oral presentation that is electronically mediated and the student, physically separated, takes notes.

Telelesson Plan (TLP)

This is a special lesson plan prepared for a teleclass. The TLP includes: A detailed presentation outline or full narrative; timing of all segments; production notes for the television camera operator if television is used; a description of what will appear on the television screen as well as what the instructor will be doing; a description of what students will do at the field sites; and what type of handout will be used. (See also Storyboard).

Telemedicine

The application of information technology (and infrastructure) in the healthcare industry in support of patient care and patient-related activities. Usually used to let a physician in a remote location assist with a medical procedure or diagnosis or consultation.

Telephony

The art and science of sound transmission over a distance by changing sounds into electrical signals for transmission through communication equipment.

Teleprompter

A script is shown on a television screen that is placed next to a television camera lens. Although appearing to speak from memory, the instructor "reads" the script.

Teleputing

Combination of television and computing in a single instrument.

Telesophy

"...the potential ability to make all knowledge available to anyone, anywhere, anytime" (Perelman, 1992, p.37).

Telesyllabus

A detailed syllabus prepared for a telecourse. This is also called a Student Reference Manual. It should provide all information that a student enrolled in a telecourse will need.

Teleteaching

A teaching situation in which the instructor and student are physically separated and linked electronically for all communications. This could be in synchronous or asynchronous time. In case of the latter packaged learning materials are provided for the student and then followed up with two-way communications.

Television Format

Refers to the 3 x3 aspect ratio by which a television lens sees everything. All pictures and graphics must be formatted as three units high and four units wide.

Telnet

This is a service that allows the user to log into a remote computer and act as a terminal on that computer. Examples include library catalogues, databases, bulletin boards, journals, and scholarly papers.

Template

A standard form to be used repetitively for communications such as a standard reply on a specific topic. A learning contract uses a template. (6) (template document) An electronic document that is "empty" (devoid of content) or in which dummy content exists. In the former case, new information is placed in to the document; in the latter case, the dummy content is replaced with new information.

Tera

One trillion.

Terabyte (tb)

One trillion bytes or 1000gb.

Teraflops

One trillion calculations per second.

Terminal Learning Performance Objective (TLPO)

The end-of-telecourse or end-of-telelesson statement of knowledge and skill that is expected of a student. All teaching and learning activities focus on the student's achievement of these objectives. The TLPO's are stated in precise observable language that is capable of measurement.

Theatrics

Techniques borrowed from the theatre to enhance a telelesson. This could include the use of hats and/or costumes or other theatrical artifacts and devices.

TIA

Acronym for "Thanks in advance."

Tight Shot

This is a television shot that fills the screen. For an instructor it would be from the shoulders up.

Time-Based Corrector (TBC)

A black box used to synchronize and make stable two or more television signals.

Timing

This refers to the instructor's ability to use presentation and activity time within a 50- or 75-minute teleclass.

TLP

See Telelesson Plan.

Touch Pad

A small electronic pad or device that students use to respond to questions or express attitudes. It is composed of numbers and letters which are pressed by the student upon request. The instructor receives a numerical average or responses.

Train the Trainer

An approach to staff development that relies on developing a cadre of well-trained individuals in an organization who train other staff.

Transfer Rate

The time it takes to transfer data from one location (device) to another. In computer hardware evaluation, transfer rate would be used to measure the performance of input and output devices.

Transistor

It is made of a special semiconducting material that functions like a vacuum tube but is much smaller, generates less heat, and requires significantly less energy. A microchip is made up of many transistors.

Transition

The movement or flow of a program from one video clip to the next. The most frequently used and simplest transition is the cut. Fades and dissolves are also popular.

Transition Statement

The ability of the instructor to move from a key point in a story or anecdote to a teaching point. This also applies to the ability of the instructor to move from a live or videotaped presentation to a student activity at a field-site.

Transmission Control Protocol/ Internet Protocol (TCP/IP)

The standard protocol used on the Internet. Originally developed by the U.S. Department of Defense for ARPANET.

Transponder

One television channel of many on a satellite that can receive and transmit television, audio, and computer signals. Each transponder can carry one color television channel with sound or 1200 voice channels. (6) A satellite's receiver and transmitter that receives and amplifies a signal prior to its re-transmission to an earth station. (9) the component of a satellite that sends and receives the transmissions. (10) a single section of a satellite used to transmit and receive signals.

Trigger Video

A two- to four-minute video segment of video either produced or edited from commercial videos. It is designed or selected to elicit an emotional response to a situation from students rather than a rational response. It is a shot visual case study. (See also Video clip and Video scenario).

Tripod

A three-legged stand to hold pictures and graphics as well as pull cards. A tripod is also used for a television camera.

Twisted Pair

Two copper wires twisted around each other in transmission circuits. They can be shielded or un shielded.

Two-way Audio

This is a synchronous form of education. It was the first widely used form of distance education. Instructors can lecture, ask questions, and lead discussions. Students can listen, ask questions, and participate in the discussions. This is often augmented by pre-printed texts that are mailed prior to the lesson. This is modeled after the traditional classroom. A disadvantage is that instructors and learners can only hear each other.

Two-way Audio with Graphics

This is two-way audio enhanced by sending graphic information synchronously to learners. This is usually done by graphics boards that are connected in several different locations. It can also be accomplished via simultaneous use of telephones and personal computers linked by the web or special software.

Two-way Audio, One-way Video

Courses offered synchronously from 2 to 100s of locations. The audio can be hard wired or have an "800" number to call in on.

Two-way Audio/Video

Most two-way audio/video is conducted through specially wired and designed "smart classrooms." An example is Iowa Communications Network (ICN). Iowa has a goal of at least one "point of presence" (wired classroom for two-way audio/visual) in each of its 99 counties. These specially wired classrooms could be in schools, universities or libraries. (10) Interactive video in which all sites are in visual contact with one another. Some form of audioconferencing is used for real-time verbal interaction.

Two-Way Television

This consists of two-way video and two-way audio. The instructor and students can see and hear each other. Any field site can originate a program.

Typeface

The characteristic, distinctive outline or shape of a collection of characters comprising all the letters of the alphabet, the numerals, and associated characters.

Typestyle

A variation of the basic, or roman, font. Common variants include italic, bold, bold italic, outline, and shadow.

UHF

Ultra High Frequency. This frequency is used for channels that range from 14-69.

Uniform Resource Locator (URL) An electronic address that identifies a unique location of a data file on the World Wide Web. (5) these are Internet or WWW addresses. It is standard format for locating any type of resource on the Internet. An example would look like: <http://eduweb.nmsu.edu>.

Universal Service

Having telephone service available in every home in the United States.

UNIX

A powerful multitasking operating system developed at Bell Laboratories on 1969 and written in the C programming language. Variations of UNIX exist that enable it to run on IBM, Apple, and other manufacturers' computers. The UNIX operating system is especially popular for supporting the "server" function in client-server environments such as the Internet.

Uplink

The transmission of data from an earth station to a communications satellite. (5) The capability of sending an electronic signal to a transponder on a satellite. There are two types - Ku-band and C-band. (6) The communication link from the transmitting earth station to the satellite. Consists of a large directional antenna and high power transmitters. (9) The transmission of signals from an earth station to the satellite. (10) A satellite dish used to transmit an electromagnetic signal up to a satellite transponder.

Upload

In a computer network, the process of transmitting a copy of a file from a computer to a central file server. (5) The process of transferring (copying) data files to a main host computer from a smaller computer. It is the opposite of download. (10) the transfer of copies of a program or file from the user's own terminal to a remote data base or other computer. The reverse of downloading (Sipl, 1990).

URI (Uniform Resource Locator)

A term used sometimes for certain URIs to indicate that they might change.

URL

See Uniform Resource Locator. (8) The global Internet address of documents and other resources on the World Wide Web. The first part of the address - ftp or http - indicates the protocol to use, and the second part specifies the Internet Protocol (IP) address or the domain name where the resource is located.

Usenet

A discussion global newsgroup. Messages and comments are automatically sent to you. All postings that you make have your e-mail address. (6) A service available on the Internet that supports ongoing discussions called news groups. (8) Groups formed around numerous topics that are located or housed on the Internet. The usenet is a worldwide bulletin board system that can be accessed through the Internet or the online server.

Valid

Used to refer to something that achieves what it was purported to achieve.

VCR

Video Cassette Recorder usually used in education in a 1/2" format. (9) Device for playing and recording videotapes in Beta, VHS, or 8mm format.

Vertical

Top to bottom. Opposite of horizontal. Television cameras "see" in a horizontal format.

VGA

See Video Graphics Adapter.

VHF

Very High Frequency television channels from 2-13.

VHS

Video Home System. The standard 1/2" video format.

Video Board A CPU component capable of accepting and generating video.

Video Bridge

A computerized video switching system that allows for many people to participate in synchronous time in a videoconference. Also called multipoint video conferencing.

Video Capture

Term used for converting analog video into a digital video file.

Video Clip

A shot segment of videotape taken from a movie or produced locally. It is usually 3-5 minutes in length. (See also Trigger Video and Video Scenario).

Video Digitizer

A device that converts a television picture into an electronic equivalent for manipulation by a computer.

Video Graphics Adapter (VGA)

A screen standard with 640 by 480 pixels.

Video Scenario

A short 3- to -minute video clip copied from commercial videotape or produced by the instructor. It presents a scene of a "happening." The students are asked to respond to what they have seen and discuss it.

Video, Full Motion

This is broadcast quality video played at 30 frames per second.

Videocassette Recorder

One-half inch videotape recording device with the capability to record up to six or eight hours on one cassette. There are also three-quarter-inch and one-inch videotape recorders.

Videoconferencing

The use of analog or digital video technology to connect multiple parties simultaneously in a conference where participants can see and hear each other. Point-to-point videoconferencing refers to a two-party conference. Multipoint videoconferencing refers to a multiple (more than two) party conference. (2) Similar in concept to audioconferencing but employs both voice and motion-video communications. Participants are able to see participants at other locations if allowed by the chairperson or instructor. Uses digital transmission systems such as ISDN, switched 56 services, or dedicated channels such as DS-3 and fiber optics. (3) The practice of connecting people at two or more locations through analog or digital video transmission. Videoconferencing stations can be connected in point-to-point or multipoint configurations. (5) An interactive one- or two-way video and audio conference among three or more designated sites. It can be conducted via telephone lines (compressed) or satellite. (8) Conducting a conference between two or more computers at different locations by the use of networks to transmit

and receive audio and video data. (10) A meeting, instructional session, or conversation between people at different locations relying on video technology as the primary communication link.

Videodisc

An optical disc used to store video images and associated audio or sound information in analog format. Same as laserdisc. (5) An optical or laser disc that stores full-motion videos (one hour) or up to 54,000 still photos, graphics, and text. These discs are about the size of a 33 1/3 RPM record. (9) Optical storage medium that allows random access of information when connected to a computer.

Videodisc

A reflective disc that contains video and audio information and is designed for playback on a television screen. Optical videodiscs are based on a system in which the tracks on the disc are monitored by an optical laser.

Videotape Master

The original videotape on which a telecourse is recorded.

Viewfinder

The eyepiece on a television camera through which an operator looks to see the action as it is seen by the camera.

Vignette

A short literary composition that is compact, subtle, and delicate.

Voice-Activated

A sound-sensitive microphone that is activated when a person speaks.

Viola

An interpreted computer language (like Java) developed by PeiWei at the University of Berkeley. Also, a Web browser built using Viola.

Virtual

Being functional and effective without existing in a traditional mode. Virtual learning, for example, is learning that can functionally and effectively occur in the absence of traditional classroom environments. (5) A reference to something whose existence is emulated with a software package rather than actually existing in any type of physical form. This is a completely computer-generated environment.

Virtual Hypertext

Hypertext that is generated from its URI by a program, rather than by recourse to a stored file.

Virtual Reality (VR)

Appearing to be real while not actually being real. A surrogate reality. The highest level of 3-D computer simulations that create the illusion of being inside a computer-generated environment. It "allows the user to transcend the barrier of keyboard and screen and enter the synthetic universe inside the computer" (Perelman, 1992, p. 40).

Vision, Clarity Of

The merging of goals, values, and guiding principles to form an identity.

Visual Indicator

Words that can be transferred into or suggest a graphic image. Examples include concepts as: Owl, woman, secretary, etc. Words that suggest visualization include direction, speed, small, large, etc.

Visual Literacy

This is the ability of an instructor or student to think, understand, and use images in a communication. Verbalism is minimized.

Visual Thinking

The ability to see, image, and design as one develops a telelesson.

V-Mail

See Voice Mail.

Voice Mail

Voice messages that can be stored and transmitted from one electronic mail box to any number of others.

Voice Over

An audio soundtrack that is played over graphics or other visual material.

VRML

Virtual Reality Modeling Language. Allows for multiple participants in interactive simulations over the WWW. (7) An idea for 3D compositional graphics on the Web, proposed by Dave Raggett as "Virtual Reality Markup Language," and implemented by Mark Pesce as a variant of Silicon Graphic's "Inventor" format; later managed by the VRML consortium, now "Web 3D" consortium.

VSAT (Very Small Aperture Terminals)

Small satellite receiving dishes usually 4 to 6 inches in diameter used for digital transmission.

W3C (World Wide Web Consortium)

A neutral meeting of those to whom the Web is important, with the mission of leading the Web to its full potential.

WAI(Web Accessibility Initiative)

A domain of W3C that attempts to ensure the use of the Web by anyone regardless of disability.

WAIS (Wide Area Information Servers)

A distributed information system designed by Brewster Kahle while at Thinking Machines. WAIS was like a Web of search engines, but without hypertext.

Wait-Time

The amount of time that elapses between the asking of a question and the response of the student. It is usually 3-5 seconds. (See also Silence).

WAN

See Wide Area Network. Two or more computers connected over long distances by means of telephone or radio circuits.

Wave Format

Digital file format used to store sounds as a pattern of oscillatory periodic electronic signals.

Web

Short for World Wide Web.

Web Browser

See Browser. (5) A search tool used to navigate around the Internet. It uses a graphical interface for ease of use. The most popular browsers are Mosaic TM, Microsoft Explorer TM, and Netscape Navigator TM. (See also Browser).

Web Lesson

Similar to an interactive electronic text page. Many other on-line resources are available to a student dealing with the subject of the page. Key ideas on which additional information is available are underlined or highlighted in such a way that all the student has to do is click on the cued word.

Web Page

Information contained on a single page displayed on the WWW. All data has been converted to HTML that is transparent to the viewer. Each web page should be displayed with the same consistent format.

Web Site

A location on the World Wide Web that is accessed by instructing the computer to find and connect to the site's specific Internet Address, known as its uniform resource locator (URL). Web sites are repositories of information about a specific topics, institution, organization, person, place, or thing. (5) A specific location or address on the WWW. A site can have one or more pages.

Web-Based Application

Software that is designed specifically to be used with the Internet. Frequently, this term is used to describe software through which courses might be delivered, wherein a student interacts only with the computer and not with other participants.

WebQuest

A WebQuest is an "inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet. It is occasionally supplemented with video conferencing" (Dodge, 1997, may).

White Space

Space in which nothing is printed, in a deliberate attempt to unify continuous elements and separate them from disparate elements.

Whiteboard

This is document-conferencing strategy that allows multiple users to view and mark on a document simultaneously with pens, highlighters and drawing tools.

Whiteboard/Whiteboarding

And area on a display screen that multiple users can write or draw on that other remote users can see simultaneously. Whiteboards are often a principal component of computer conferencing applications because they enable shared visual communication.

Wide Area Network (WAN)

Connecting computer equipment using data communications over a widespread geographic area such as a town, city, or country. (5) A network that covers an area larger than single building or campus. It is regional. (See also Local Area Network).

Wideband

A medium capacity communications path. It has a speed of 64 Kbps to 1.544 Mbps.

Wipe

A transition effect that appears to push a new screen onto the existing screen. It can be from left to right or from top to bottom.

Word Picture (WP).

Key words and phrases encased in geometric shapes or free forms and connected with the lines or arrows to show visual spatial relationships. (See also Node).

Word Processor

The generic name for software designed to enter, edit, and manage text documents.

Workbook

A handout provided for the student that incorporate lesson outlines, readings, exercises, and activities.

World Wide Web

The protocol and file format software incorporating hyper-text and multimedia capabilities for use on the Internet. (2) Also know as the Web. A virtual library of video, audio, and textual data and information stored in the computers of the Internet. These data are accessible to anyone with a modem, a personal computer, a way of connecting to the Internet (through a private or public Internet Service Provider), and a computer application program, or "software" called a browser designed to allow a person to explore Web resources. (5) WWW. Distributed instructional resources and information on the Internet. It is a worldwide, hypermedia, and hypertext-based method of obtaining information in any format. The WWW is a by-product of the Internet. It is not THE Internet. It allows us to find, view, and use

the vast amounts of information available on the Internet in print, graphic, video, and audio formats. (7) (three words; also known as WWW) The set of all information accessible using computers and networking, each unit of information identified by a URI.

WorldWideWeb

(one word; no spaces) The name of the first Web client, a browser/editor that ran on a NeXT machine.

Writing Tablet

An electronic device through which information that is written or drawn with a stylus or light pen is transmitted to and reproduced on a monitor. Also referred to as a graphics tablet or pad.

WWW

World Wide Web on the Internet. (9) A hypermedia capability on the Internet.

X

The X Window system, invented by Bob Scheifler; a standard interface between a program and a screen that was ubiquitous on Unix systems. Unlike Microsoft's Windows, from the beginning X allowed programs running on one machine to display on another, across the Internet. Scheifler ran the X Consortium from MIT/LCS for many years, then spun it off, and eventually closed it.

Xanadu

Ted Nelson's planned global hypertext project.

XML (Extensible Markup Language)

A simplified successor to SGML. W3C's generic language for creating new markup languages. Markup languages (such as HTML) are used to represent documents with a nested, treelike structure. XML is a product of W3C and a trademark of MIT.

XSL (Extensible Style Sheet Language)

A style sheet language, like CSS, but also allowing document transformation.

YGWYS

Acronym for "You get what you see."

Zoom

A television lens that holds the focus while moving from a close up to a long shot (full body) or in reverse.

Zoom Lens

A variable focus lens.

Appendix A: Distance Education and Non-Traditional Education Terms
Compiled by Albert R. Stiles Jr

First the term “distance education” must be defined. Simonson, Smaldino, Albright, & Zvacek cite Keegan’s definition of distance education. They stated that Keegan identified five main elements of distance education that compose a comprehensive and modern definition of distance education. Keegan defined distance education as:

- The quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education).
- The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes distance education from private study and teach-yourself programs).
- The use of media – print, audio, video, or computer – to unite teacher and learner and carry the content of the course.
- The provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education).
- The quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes (1998, p. 66) ¹.

The following table of terms is drawn primarily from Simonson, et al , and Moore and Kearsley² and is based on a presentation given to Ship Owners Cooperative Program (SOCP) representatives and to the United States Coast Guard National Maritime Center (USCG NMC). The first table lists the terms in order of presentation. The PowerPoint presentation has been embedded in this document at the end of the document. The second table lists the terms in alphabetical order.

Table 1 – Terms Listed in Order of Presentation

Term	Definition
Non-traditional education	Education that is other than instructor centered, instructor led, face-to-face education.
Education Quadrants	Education is categorized in four quadrants according to the time/place relationship of the instructor and the learner. The four quadrants are Same Time/Same Place, Same Time/Different Place, Different Time/Same Place, and Different Time/Different Place.
Same Time/Same Place	Traditional Education. The instructor and learner are located in the same place at the same time. Multi-media and computer-based learning can occur in this quadrant of education. However, this is most often thought of as face-to-face, didactic learning. The number of hours spent in this time of learning are often referred to as “contact hours.” An advantage to this type of education is that communication and feedback are immediate and personal. A disadvantage to this type of education is that the instructor and learners have to travel to a central learning place at the same time.
Different Time/Same Place	This is often thought of as independent study. This is self-paced study. It is still guided by an instructor. However, instructors may be available only during certain hours. Computer Learning Centers are an example of this concept. Learners still have to travel to a central learning facility.
Same Time/ Different Place	The instructor and classroom are “wired” to be transmitted to other locations. The most effective form of this education is full use of audio and visual multi-media. However, it can be just audio (such as a phone-bridge) or conducted via web (using “chat rooms”). Interaction and

¹ Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (1998) Distance education foundations. Fort Lauderdale, FL: Nova Southeastern University.

² Moore & Kearsley. (1996) Distance education – a systems view.

Term	Definition
	feedback does occur between the instructor and the learners. The amount and type of interaction and feedback that occurs depends on the link used. I.E. It is tough to read “body language” of the learners over an audio link.
Different Time/ Different Place	This is what most people think of as distance education. The old correspondence courses were an example of this form of education. The newest form of this is the use of the web and programs such as Web CT, Blackboard, Embanet, etc. Learners and instructors can post assignments and study guides on the web, provide comments and conduct asynchronous conversations.
Cone of Experience	Edgar Dale (1946) put forth a theory of learning referred to as “Dale’s Cone of Experience.” In Dale’s theory children have to learn by direct exposure and experience because they have no previous knowledge base. Adults, on the other hand, have the benefit of previous experience to learn new information. This can be done by use of analogy. As learners grow older and have more experiences, it is possible to understand events that are less realistic and more abstract.
Role of Media in Distance Education	Media permit the educator to bring the sights and sounds of the real world into the learning environment. It is important to be as realistic as possible when new information is presented.
Correspondence Course	This is the simplest and oldest form of distance education. Assignments are mailed to the learner. The learner completes the assignment and returns it to the instructor for grading. Feedback is provided via mail and the next assignment is mailed to the learner. The cycle repeats until the course is completed. This form of education is inexpensive, can be completed anywhere, and has been proven effective.
Pre-recorded Media	As media developed, so did the use of media in correspondence courses. Printed material was augmented with pictures, audio recordings, and videotapes. The latest form of media transfer is Compact Disc.
Two-way Audio	This is a synchronous form of education. It was the first widely used form of distance education. Instructors can lecture, ask questions, and lead discussions. Students can listen, ask questions and participate in the discussions. This is often augmented by pre-printed texts that are mailed prior to the lesson. This is modeled after the traditional classroom. A disadvantage is that instructors and learners can only hear each other.
Two-way Audio with Graphics	This is two-way audio enhanced by sending graphic information synchronously to learners. This is usually done by graphics boards that are connected in several different locations. It can also be accomplished via simultaneous use of telephones and personal computers linked by the web or special software.
One-way Live Video	This is often referred to as “broadcast distance education.” This was popularized in the 1950’s by programs such as <u>Sunrise Semester</u> . This form of education is used primarily by Public TV and can also be augmented by other forms of pre-recorded media.
Two-way Audio, One-way Video	Courses offered synchronously from 2 to 100’s of locations. The audio can be hard wired or have an “800” number to call in on.
Two-way Audio/Video	Most two-way audio/video is conducted through specially wired and designed “smart classrooms.” An example is Iowa Communications Network (ICN). Iowa has a goal of at least one “point of presence” (wired classroom for two-way audio/visual) in each of its 99 counties. These specially wired classrooms could be in schools, universities, or libraries.
Desk Top Two-way Audio/Visual	Progress is being made towards “desk top” 2-way A/V through the use of Personal Computers. This will reduce the need for special equipment and special networking.
System Speed	Analog, or “twisted pair” networks are limited to 1,000’s of feet. High speed systems are defined are capable of exchanging millions of bits per

Term	Definition
	second (BPS). Medium Speed systems are defined as capable of exchanging 128,000 to 256,000 BPS. Low speed systems are capable of exchanging 56K BPS or less (typical of modems).
CBT	Any training and/or education that uses a computer. This includes Computer Learning Centers, simulators, distributed disks, simulators, and networked computers.
Computer Learning Center	Traditional classroom augmented by computers or different time/same place tutorials that people can log in according to time availability.
Distributed disks/CD ROM	Stand-alone training distributed via computer disks (of various sizes) and/or Compact Disk (read only memory). A USCG R&D study showed equipment training based on CD ROM was effective and reduced the time required to train the equipment by 70% versus traditional classroom/lab training. CD ROM is popular because it carries 75 MB of information. DVD is emerging technology.
Simulators	Simulators range from part task to high end “full mission” simulators. DNV has recommended standards for classification. Fidelity and realism are factors in determining usefulness of simulators in training and competency assessment. Simulators are relatively high cost. However, simulation provides experiential learning.
Networked (Web-based)	Currently limited by band-width. Can be mitigated by use of distributed disks that hold memory intensive files. Live video is the biggest problem in networked synchronous training.
Band Width	How much data can be transferred from one computer to another per second defines the band-width.
Asynchronous	Not at the same time.
Synchronous	At the same time.
Mixed Methodologies	Courses that combine media and delivery methods. This could be an “on-line” course that uses textbooks with assigned reading, on-line chat sessions, web reference sites with self-paced tutorials, and audio bridges. Work assignments usually submitted by mail, e-mail, and/or posting to a web page that is created by the learner and maintained on the school’s server. There may even be face-to face components via video and/or physical presence.
Systematic Process	Instructional Systems Design (ISD) is generally accepted as the systematic process that should be used in the design of instruction. The Coast Guard requires Train-The-Trainer courses be based on ISD. There are generally accepted to be five phases (Dick & Carey, 1996) in the ISD process. Those phases are: Analysis, Design, Development, Implementation, and Evaluation (ADDIE). This is often referred to as the “ADDIE” model. The factors considered during the analysis and design phases include: learners, content, methods & media, environment, technology available, and the context in which it (content) will be taught.
Distance Instruction Planning	When planning for instruction at a distance, the focus shifts to more visual presentation, engaging the learners (learner centered versus instructor centered), and the timing of the presentation of material. Traditional materials are often revised to illustrate key points and concepts using tables, figures and other visual imagery. Activities that encourage interactivity need to be incorporated. Student group work activities need to be well planned (helps construct supportive social environment). Plans must be made for alternative delivery because equipment failures occur. Contingencies must be discussed beforehand. Other considerations include: lack of eye contact and body language (informal feedback), increased time constraints, the necessity of established milestones, and increased time and/or complexity for distribution of materials.
Assessment	Determination of a learner’s ability to perform a task, as defined by a

Term	Definition
	performance objective, to a minimum set of criteria.
Computer based examination.	An examination conducted on a computer. An example of this is an examination that is created by the computer where each student receives a different subset of questions that are randomly generated by the computer from a question pool.
Project Report	Students complete a project and draft a report based on a research study or solution of a problem presented to them instead of a final examination.
Proctored Examination	An examination whereby the learner is supervised by a proctor. In distance application, proctors could be teachers or administrators who are selected by the learner and approved by the distance education institution. An alternative is for the learner to travel to a regional site sponsored by the distance education institution to take the final examination.

Table 2 – Terms Sorted Alphabetically

Term	Definition
Assessment	Determination of a learner’s ability to perform a task, as defined by a performance objective, to a minimum set of criteria.
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