DISTANCE EDUCATION FOR TEACHER TRAINING:

Modes, Models, and Methods

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Section III.

APPENDICES:
LISTS AND GLOSSARY OF TERMS

Appendix 1: List of Countries and Territories Referenced in This Guide

Listed by official names (188 nations and territories)

Afghanistan
Anguilla (UK)
Antigua and Barbuda
Arab Republic of Egypt
Argentine Republic
Barbados
Belize
Bolivarian Republic of Venezuela
Bosnia and Herzegovina
British Virgin Islands
Burkina Faso
Canary Islands (Spain)
Cayman Islands (UK)
Central African Republic
Commonwealth of Australia
Commonwealth of Dominica
Commonwealth of Puerto Rico (USA)
Commonwealth of The Bahamas
Cooperative Republic of Guyana
Country of Aruba
Country of Curaçao
Crown Colony of Montserrat
Czech Republic
Democratic Republic of São Tomé e Principé
Democratic Republic of the Congo (DRC)
Democratic Socialist Republic of Sri Lanka
Dominican Republic
Dominion of Canada
Federal Democratic Republic of Nepal
Federal Republic of Germany
Federal Republic of Nigeria
Federal Republic of Somalia
Federated States of Micronesia
Federation of Malaysia
Federation of Saint Kitts and Nevis
Federative Republic of Brazil
French Republic (France)
Grand Duchy of Luxembourg
Grenada
Hashemite Kingdom of Jordan
Hong Kong Special Administrative Region of the People's Republic of China
Hungary
Independent State of Papua New Guinea
Independent State of Samoa
Islamic Republic of Mauritania
Italian Republic (Italy)
Jamaica
Japan
Kalaallit Nunaat (Greenland)
Kingdom of Belgium
Kingdom of Bhutan
Kingdom of Cambodia
Kingdom of Denmark
Kingdom of Eswatini (Swaziland)
Kingdom of Lesotho
Kingdom of Morocco
Kingdom of Netherlands
Kingdom of Norway
Kingdom of Saudi Arabia
Kingdom of Spain
Kingdom of Sweden
Kingdom of Thailand
Kingdom of Tonga
Kyrgyz Republic
Lao People's Democratic Republic
Lebanese Republic (Lebanon)
Oriental Republic of Uruguay
People's Republic of Bangladesh
People's Republic of China
People's Republic of Montenegro
Plurinational State of Bolivia
Portuguese Republic (Portugal)
Principality of Andorra
Principality of Liechtenstein
Republic of Albania
Republic of Angola
Republic of Armenia
Republic of Austria
Republic of Azerbaijan
Republic of Belarus
Republic of Benin
Republic of Botswana
Republic of Bulgaria
Republic of Burundi
Republic of Cabo Verde
Republic of Cameroon
Republic of Chad
Republic of Chile
Republic of China (Taiwan)
Republic of Colombia
Republic of Costa Rica
Republic of Côte d'Ivoire
Republic of Croatia
Republic of Cuba
Republic of Cyprus
Republic of Djibouti
Republic of Ecuador
Republic of El Salvador
Republic of Estonia
Republic of Ethiopia
Republic of Fiji
Republic of Finland
Republic of Georgia
Republic of Ghana
Republic of Guatemala
Republic of Guinea
Republic of Guinea-Bissau
Republic of Haiti
Republic of Honduras
Republic of Iceland
Republic of India
Republic of Indonesia
Republic of Iraq
Republic of Ireland
Republic of Kazakhstan
Republic of Kenya
Republic of Kiribati
Republic of Korea (South Korea)
Republic of Kosovo
Republic of Latvia
Republic of Liberia
Republic of Lithuania
Republic of Madagascar
Republic of Malawi
Republic of Maldives

Republic of Mali
Republic of Malta
Republic of Mauritius
Republic of Moldova
Republic of Mozambique
Republic of Namibia
Republic of Nauru
Republic of Nicaragua
Republic of North Macedonia
Republic of Panamá
Republic of Paraguay
Republic of Perú
Republic of Poland
Republic of Rwanda
Republic of San Marino
Republic of Senegal
Republic of Serbia
Republic of Seychelles
Republic of Sierra Leone
Republic of Singapore
Republic of Slovenia
Republic of South Africa
Republic of South Sudan
Republic of Suriname
Republic of Tajikistan
Republic of the Gambia
Republic of the Niger
Republic of the Philippines
Republic of the Sudan
Republic of the Union of Myanmar
Republic of Trinidad and Tobago
Republic of Turkiye (Turkey)
Republic of Uganda
Republic of Vanuatu
Republic of Yemen
Republic of Zambia
Republic of Zimbabwe
Romania
Russian Federation
Saint Lucia
Saint Vincent and the Grenadines
Sint Maarten (Kingdom of the Netherlands)
Slovak Republic
Socialist Republic of Vietnam
Solomon Islands
State of Israel
State of Kuwait
State of Libya
State of Palestine
State of Qatar
Swiss Confederation (Switzerland)
Syrian Arab Republic
Togolese Republic
Tuvalu
Ukraine
Union of the Comoros
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United Mexican States (México)
United Republic of Tanzania
United States of America
Uzbekistan
Vatican City State (The Holy See)
Virgin Islands of the United States
Zanzibar

Appendix 2: Glossary of Terms Used in This Guide

Accessible Materials, technology, and learning experiences that individuals with auditory, visual, or motor disabilities can use, understand, interact with, and learn from to the same degree as individuals with no disabilities.

Accreditation The systematic assessment of a program or institution in meeting certain standards. Accreditation is typically voluntary and involves a rigorous external, peer, and self-assessment process. Once programs or institutions meet or exceed all standards and evaluation criteria, they are accredited by an accrediting agency (such as the Distance Education Accrediting Commission [DEAC] or the National Council for Accreditation of Teacher Education [NCATE]), which provides official recognition of excellence. At the program level, accreditation focuses on the quality of a specific program or course of study. At the institutional level, accreditation focuses on the quality of the entire institution. Accrediting agencies can be international, national, or regional.

Acoustic treatments Actions, activities, or "treatments" to reduce the amount of diffuse noise to improve the signal and acoustic quality of a space. Acoustic treatments attempt to reduce:

- *reflection* (sound waves reflecting or bouncing off other surfaces in their path, potentially being deflected from their target destination);
- *reverberation* (multiple sound waves bouncing off of surfaces and combining to create an "echoey" sound); and,
- *resonance* (when one object vibrating at the same natural frequency of a second object forces that second object into vibrational motion, it can cause loud, distorted sounds, sometimes causing feedback in sound systems).

Acoustic treatments to address such issues might include double glass glazing on windows, rugs on hard floors, putting tapestries on opposite facing walls, or substituting wood tables for metal ones (Illuminated Integration, 2020).

Active learning A broad variety of strategies or pedagogical approaches designed to place the primary responsibility for creating and/or applying knowledge on the learner. Active learning is also known as "child-centered," "interactive," "student-centered," or "learner-centered" instruction.

Analog technology Any technology that is not digital. Examples include many types of radio and television, as well as audiocassette players. These devices record sounds of different frequency and amplitude on magnetic tape.

Application Programming Interface (API) A small software program that allows one software program to interact with another. Thanks to APIs (e.g., Google *Chrome Extensions* that increase the functionality of a Google document), online learning has increasingly incorporated more interactive, browser-based learning activities. APIs don't work only with browsers. They can allow for interoperability among platforms and software applications, for example, an LMS pushing out grades to a school's existing student information system or *Zoom* working within an LMS (Burns, 2021).

Applications ("apps") A type of computer software program that performs a specific function. Apps can run on smart phones, tablets, or any other portable electronic device.

Artificial Intelligence (AI) The branch of computer science dealing with the reproduction or mimicking of human-level thought in computers. Encompassing cognitive science, mathematics, and computational linguistics, AI breaks down human knowledge into a number of topics—reasoning, knowledge, planning, learning, communication, perception, and the ability to move and manipulate objects—and attempts to imitate these through the use of algorithms.

AI uses a multitude of approaches. Classical—or rules-based—AI uses rules of conditional logic

(e.g., *if…then* statements) and has been used for decades to power educational applications (Pelletier et al., 2021, p. 7). Increasingly, AI uses computational approaches such as machine learning, deep learning, natural language processing, and artificial neural networks to build models that predict future values, find patterns, mimic human speech, and automate a variety of tasks (Miao et al., 2021).

Asynchronous learning This involves individuals learning at different times and in different places. Learners work on their own without live interaction with others. This may include interactions via communication tools that involve a time lag, such as email, bulletin boards, or discussion forums.

Augmented Reality (AR) A live, direct, or indirect view of a physical, real-world environment whose elements are *augmented* by computer-generated sensory input, such as sound, graphics, or Global Positioning System (GPS).

Avatar A computer user's representation of himself/herself or of an alter ego, whether in the form of a three-dimensional model used in computer games or a two-dimensional icon (picture). An avatar also can refer to the personality connected with the screen name, or "handle," of an Internet user.

Backward design Also known as Understanding by Design (UbD), backward design is an instructional design approach developed by Grant Wiggins and Jay McTighe (2005). A three-stage process, *backward design* begins with the end, or goal, in mind: What should learners know or be able to do as a result of learning a certain unit? The second stage focuses on assessment: How will the instructor know that learners have attained instructional goals? The third stage focuses on planning for instruction: What kinds of activities, experiences, materials, and tools should the instructor design so that she or he can assess for understanding of learning goals? (Wiggins & McTighe, 2005).

Bandwidth The range of frequencies that can pass over a given transmission channel, determining the rate at which information can be transmitted through the circuit. The greater the bandwidth, the more information that can be sent in a given amount of time. Bandwidth typically is measured in *bits per second*. A *bit* ("binary" + "digit") is a unit of measurement of information. There are eight bits in a byte. Bandwidth ranges from 56kbit/second ("dial-up") to 100 Gbit/second (100 Gigabit Ethernet) (Gartner, 2023).

Bichronous A combination of asynchronous and synchronous online delivery methods. Learners participate in anytime, anywhere learning during the asynchronous parts of the course. They then participate in real-time activities for the synchronous sessions. The amount of online learning varies by the course and the activities included in the course (Martin et al., 2020).

Blended learning An instructional approach that integrates both face-to-face and online learning in the delivery of course or educational materials. It is a pedagogical approach where classes or learning environments provide an integrated mix of traditional face-to-face instruction and Web-based online learning.

An array of technologies can be used to support this methodology, but it often involves an online content provider (such as Khan Academy) and a learning management system (LMS) to "manage the learning across the two environments" (Goff, 2017, p. 6). Blended learning is evolving from its synonymity with "hybrid learning"—increasingly referring more to the organization of learning with and without technology as part of a formal educational experience.

Blockchain A distributed database or ledger shared among the nodes of a computer network. A blockchain collects information together in digital "blocks" that hold sets of information and that have certain storage capacities. When this capacity is reached, the block is closed and linked to the previously filled block, forming

the "chain" of data. Blockchains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions, and for guaranteeing the fidelity and security of a record of data. Thus, blockchains generate trust without the need for a trusted third party (Hayes et al., 2022).

Blog (from "Web log") A publicly accessible journal that is kept online and allows for others' comments. The blog owner may choose to identify himself or herself or to write anonymously.

Bluetooth A wireless protocol for exchanging data over short distances among cell phones, headsets, computers, and other electronic devices.

Broadband A range of frequencies wider than that required for voice communications. Broadband is also a term used to describe systems and equipment with high bandwidth that can carry these frequency ranges.

Bulletin board An online space where users can post information and resources and communicate with others. It is an asynchronous technology.

Cable television A television subscription service in which the signal is distributed via a cable, versus broadcasting or satellite transmission. Cable carries a much larger number of channels. Increasingly, cable television viewers can interact with the distribution center or with content through downloadable apps, websites, and television features.

Chat A piece of software, such as Facebook's *Messenger, WhatsApp*, or *iChat,* which allows users to communicate synchronously (at the same time) with people who also are online and logged into the same "chat" software.

Chatbot A chatbot is a software application designed to mimic conversation with users. There are multiple types of chatbots: rules-based chatbots, menu-based, keyword based, voice-based, conversational chatbots powered by machine learning and Artificial Intelligence (AI), and hybrid chatbots which are developed using AI and non-AI features (Engati, 2023).

Choiceboard Web-based files, typically organized in a nine-square grid, that usually start with a specific learning goal, then provide learners with a variety of ways they can choose to learn about a particular topic, practice a skill, or demonstrate understanding. They can be created in Microsoft *Word* or Google *Docs*, Microsoft *Excel* or Google *Sheets*, or presentation software.

Chromebook A notebook computer lacking a hard drive that runs Google *Chrome's* operating system and Google applications. All content is stored in and accessed via the Internet (the "cloud").

Cloud computing Internet-based computing in which applications are stored not on the computer's hard drive but on servers (the cloud), so that users can access them as needed without paying for a software license or devoting computer storage space to house them. Web 2.0 applications are examples of cloud-based applications and cloud computing.

Coding For *computing*, coding is the use of a particular programming language to make a computer application perform a desired function. Each line of the code is a set of instructions for the computer. A set of codes form a script, and a script or dozens of scripts form a computer program (Khatri, 2023).

For *qualitative research*, coding is the process of assigning descriptors to a particular statement, behavior, or attitude (referred to here as a *variable*) in a narrative text, audio, or video for the purposes of classification. In *inductive* or *open* coding, an evaluator assigns a code to a variable and then combines variables to enumerate the number of occurrences of a code or related set of codes to identify a theme. This is part of "grounded," or inductive, research. *Deductive* or *theoretical* coding involves identifying codes derived from the overall philosophical framework

or hypothesis of the qualitative design and is used to confirm a hypothesis. *Hybrid* coding combines the use of inductive and deductive coding. Coding can be done by hand or, more commonly, through qualitative research software such as *NVivo* or *Dedoose*.

Compact Disc (CD) An optical disc used to store digital data, such as digital audio and video. A CD-ROM ("compact disc read-only memory") is readable by either a computer with a CD-ROM drive or by CD players.

Compression Any of several techniques that reduce the number of bits required to represent information in data transmission or storage, allowing for conservation of bandwidth and memory and thus faster transmission, downloading, and uploading times. *WinZip* is an example of a compression application.

Computer-Aided Instruction (CAI)/Computer-Aided Learning (CAL) Instruction delivered by a computer. The computer acts as a teacher and presents content and problem sets with which the learner interacts. CAI programs vary greatly in quality. Some programs are behaviorist, drill-based applications, while others are more constructivist in their design, offering more iterative problem sets and feedback to address specific learner weaknesses adjusted by the computer.

Computer Assisted Telephone Interviewing (CATI) A common research and marketing practice in which interviewers conduct telephone-type surveys through a special kind of software on a computer or mobile device. The software loads contact names and numbers and the person making the call uses the software platform, often following prompts or scripts. Data then can be easily entered by the caller and, in the case of some platforms, automatically transcribed via voice-to-text features.

Computer-Mediated Communication (CMC) Any communicative transaction that occurs through the use of two or more networked computers. This can involve the use of email, chat, bulletin boards, discussion forums, or any type of one- or two-way communication occurring over a computer via a network.

Connectivism Also known as connectivist learning, connectivism is grounded in the idea that learning is not simply the domain of individuals but occurs within and across digital networks.

Connectivity The technological capacity that specifically allows computers and other electronic devices to communicate with one another, particularly in relation to telecommunications technologies such as email, the Internet, and chat.

Constructivism A learning theory that has its roots in a number of disciplines—philosophy, anthropology, the natural sciences, semiotics, sociolinguistics, and education. The central idea of constructivism is that knowledge is not fixed, but rather is constructed by the learner. Some of the other major concepts of constructivism are that learners bring unique, prior understandings to any learning situation; learning is an adaptive activity; learning is situated and contextual; learners may resist, accommodate, or assimilate new learning; and that people learn by interacting with materials, resources, experiences, and other people (Boethel & Dimock, 1999; Dimock et al., 2001). The instructional offspring of constructivist learning theory is learner-centered, student-centered, child-centered instruction or active learning.

Content management system (CMS) A Web-based application used to collect, manage, edit, and publish Web-based content such as text, image, video, or any other form of media—for example, *WordPress*, *Drupal*, or *Sitecore*.

Course management system (CMS) See *Learning Management System*.

Creative Commons An American nonprofit organization and international network focused on overcoming the legal obstacles to the sharing of knowledge and creativity. It does this primarily

by offering creators a choice of six licensing types for granting the public permission to freely use work under copyright laws (Creative Commons, n.d.).

Criterion-referenced assessment A measure of a learner's performance against a predetermined set of standards (criteria).

Data dashboard A display of small pieces of distinct types of visual data such as gauges, charts, and tables within a Web browser. The concept is similar to the information provided by a car's dashboard. Popular data dashboards include *Power BI, BrightBytes*, and *Redash*.

Digital game A game played by manipulating some form of electronic media (e.g., game console, cell phone, computer). Web-based digital games can be played across media, time, and social spaces.

Digital learning game Unlike entertainment games, this is a type of game that targets the acquisition of knowledge in a particular domain or set of domains and habits of mind—creativity, problem solving, conative skills, inquiry, distributed cognition, and heuristic methods—across all academic content areas (Klopfer et al., 2009).

Digital rights management Protection of copyrighted digital content to prevent unauthorized viewing, copying, or distribution.

Discussion forum An online or virtual message board where users post materials, comments, ideas, and so on. Discussion boards are part of most learning management systems and are typically asynchronous.

Distance education An educational process and system in which all or a considerable proportion of the teaching is carried out by someone or something removed in space and time from the learner. Distance education requires structured planning, well-designed courses, special instructional techniques, and methods of communication by electronic and other technologies, as well as specific organizational and administrative arrangements (UNESCO & UNEVOC, 2017; Keegan, 1996).

Distance learning A system and process that connects learners to distributed learning resources. Distance learning can take a variety of forms, but all distance learning is characterized by (1) separation/distance of place and/or time between instructor and learner, among learners, and/or between learners and learning resources; and (2) interaction between the learner and the instructor, among learners, and/or between learners and learning resources conducted through one or more media (Keegan, 1996; UNESCO & UNEVOC, 2017).

Dual-mode institution Traditionally, an institution of higher education in which teaching, learning, and administrative systems support both campus-based and distance-based education. The Distance Education Centre at the University of the West Indies (UWIDEC), which has physical campuses in Caribbean islands of Trinidad, Jamaica, Antigua and Barbuda, and Barbados (now called the "Open Campus of UWI"), was one such model of a dual-mode institution. The term is quickly giving way to "hybrid" as universities increasingly offer both in-person and online degree programs.

Digital Video Disc/Digital Versatile Disc (DVD) An optical disc storage media format that can be used for data storage—for example, of movies with high video and sound quality. DVDs resemble CDs in terms of physical dimensions, but they can store much more data than CDs.

Digital Video Recorder (DVR) A device or program that records television programs as they are broadcast and stores them for replay later. They may be set-top boxes, computer-based, or a feature that is integrated into the television itself.

Education management information system (EMIS) A computer-based system of hardware and software (and people) that allows institutions

to store, search, and retrieve data in order to make educational decisions about enrollment, resources, cost, and so on. An EMIS is typically a database program. There are numerous variations of EMIS—for instance, a student information system (SIS).

Educational television Noncommercial television that provides programs, especially of an educational nature, for the public. Its programming emphasizes formal classroom instruction and enrichment, in contrast to commercial television, which generally focuses on entertainment. *Sesame Street* and *Ubongo Kids* are examples of educational television programming for children.

Effect size An effect size specifies the number of standard deviation (SD) units separating the outcome scores of treatment and control groups in a study. They are expressed as the standardized mean difference (SMD), interpreted as the magnitude of the number of SD changes in the outcome for the intervention group versus the comparison group. They can therefore be used to express results from different studies on a single uniform scale of effectiveness and may be positive or negative. Effect sizes can be calculated from the means and SDs for two or more groups or on the basis of information provided in statistical tests, such as *t*-tests and analyses of variance (Means et al., 2009, pp. xiii, 14). An effect size is positive when a treatment group in a study outperforms the control group; it is negative when the control group outperforms the treatment group. Effect sizes of around 0.2 are typically considered to be small; 0.5, moderate; and 0.8, large in size. Effect sizes above 0.25 are considered large enough to be educationally meaningful (Cohen, 1988; Slavin, 1990). These guidelines are only broad generalizations, however, covering many types of interventions, target populations, and outcome measures (Hill et al. 2008).

eLearning A very broad term with no actual consensus as to its meaning. "E" refers to the format. "Learning" is the content, activities, or course of study with which learners engage to attain educational goals. ELearning may refer to formal online learning, or any kind of Web-based learning, or any technology-based learning, whether online or offline.

Electronic mail (email) A method of composing, sending, and receiving messages via the Internet. Email is an asynchronous form of communication.

e-reader An electronic reader, such as the *Kindle* or *Nook*, that allows users to read, bookmark, annotate, purchase, and store hundreds of books in a digital format. Text is displayed via *electronic ink* (e-ink), a technology designed to mimic the appearance of ordinary ink on paper. It is used in e-readers because e-ink displays don't drain batteries as much as backlit-screen devices do, and thus extend battery life.

Experimental design An evaluation design in which participants are randomly assigned to treatment and control groups. Experimental designs are considered rigorous because random selection can minimize the confounding effects of other variables.

Extensible Markup Language (XML) See *XML*.

Flexible assessment A form of learner-centered, alternative assessment that gives learners the choice of completing all or some combination of a series of optional assessment items or allows learners to select an assessment option. Flexible assessment can include checklists, portfolios, product assessment, oral or written exams, and computer-based or performance-based assessment. Flexible assessment is designed to accommodate the learner's pace, style, and context of learning.

Font families A set of letter forms with a common design element. There are five font families:

1. Serif fonts have small winged or flared tips, called serifs, extending off the tips of the letters and are typically used in printed materials. An example would be Times New Roman.

2. Sans-serif fonts use characters without serifs and are used for digital formats. An example would be Arial.
3. Cursive fonts use characters that have connective strokes which give the font a handwritten appearance. An example is Comic Sans MS.
4. Fantasy fonts are stylized fonts, such as Cottonwood, that maintain the characteristics of a non-cursive alphabet.
5. Monospace fonts have characters that are all the same width, giving text the appearance of a manual monospaced typewriter. One example would be Courier (MasterClass, 2021).

Formative assessment Assessment that is ongoing and continual and not used to certify mastery or assign grades. Formative assessment is instructional in nature; it provides information about the learner's progress and understanding of a certain concept or skill.

Formative evaluation Evaluation that involves periodic or continual monitoring of the progress of a project or its participants. Formative evaluation can be for gathering information, audience research, or program improvement purposes.

Geographic Information System (GIS) Essentially GIS is a database with mapping capabilities. It is an information system that is used to input, store, retrieve, manipulate, analyze, and visually output geographically referenced data or geospatial data, in order to support decision making for planning and management of land use, natural resources, the environment, transportation, and so on.

Global Positioning System (GPS) A worldwide radio navigation system formed from a constellation of 31 satellites (as of June, 2022) and their ground stations, that constantly orbit the Earth, making two complete rotations each day. After locating four or more of these satellites, GPS receivers on Earth employ a process of trilateration to calculate the distance to each and then use this information to deduce their own latitude and longitude (GPS.gov, 2022). Many cell phones now include a GPS, and handheld GPS devices can be inexpensively purchased and used for educational activities.

Global System for Mobile Communication (GSM) The Global System for Mobile Communications (GSM) is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile devices. Like code-division multiple access (CDMA), it is a second-generation digital mobile cellular technology (Telephone World, 2021). GSM operates in several frequency bands—900 MHz, 1800 MHz, 850 MHz, and 1900 MHz. The 900 MHz and 1800 MHz GSM frequency bands are used primarily in Europe, the Middle East, Africa, Asia, and Australia, including GSM 900 Primary (P-GSM) and GSM 900 Extended (E-GSM) bands; the 850 MHz and 1900 MHz GSM frequency bands are used mainly in North America and South America (Ghayas, 2019).

Graphical User Interface (GUI) A type of computer interface that allows the user to interact with icons versus text commands. Windows, Linux, and Apple operating systems are all examples of GUIs. Unix is not.

Hybrid learning An educational delivery approach that combines face-to-face teaching (educator to learner) with online instruction. Hybrid learning can involve both synchronous and asynchronous content delivery, addressing barriers related to space or place (Penn State University, 2021). Traditional "dual mode" universities, such as Deakin University or the University of Queensland (Australia), were the earliest hybrid universities in that they allowed learners to pursue degrees either on campus ("single-mode") or via distance ("dual-mode") through parallel, though not simultaneous, experiences. True hybrid learning involves much greater integration between on-site and online models of delivery: A learner may enroll in an online class as well as an in-person one and may attend both at the same time.

HyperDoc A digital document that acts as self-contained lesson plans, with all components of the learning cycle pulled together into one central hub connected via hyperlinks. HyperDocs typically support asynchronous learning and often are organized according to the 5E framework: Engage, Explore, Explain, Elaborate, Evaluate. Like Choiceboards, they can be created in *Word* or Google *Docs* or in *PowerPoint* or Google *Slides*.

Immersive digital environments Artificial, interactive, computer-created scenes or worlds within which users can engage or "immerse" themselves in some experience or activity. Immersive digital environments may be thought of as synonymous with virtual reality, but without the implication that actual reality is being simulated. An immersive digital environment could be a model of reality, a complete fantasy user interface or abstraction, or some sort of simulation. Immersive environments are also known as multi-user virtual environments (MUVEs) or virtual worlds. The most well-known example in education is probably *Second Life.*

Information and Communication Technologies (ICT) These are technological tools and resources—hardware, software, peripheral devices—used to find, create, store, display, and communicate information and connect learners to a variety of experiences. They can include "computers, the Internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile, satellite, video-conferencing)" (UNESCO Institute for Statistics, 2023).

Instant messaging (IM) A form of real-time communication between two or more people, based on typed text. The text is conveyed via devices (desktop, laptop, or handheld computers) connected over a network such as the Internet. IM is also known as "chat" or "SMS," and is often referred to as "texting."

Instructional design The process of creating instructional tools, content, experiences, and activities to help learners attain a specific set of learning goals. Instructional design can occur with or without technology. It consists of diagnosing the needs of the learner; defining the end goals of instruction; determining how learning goals will be assessed and evaluated; and developing interventions, experiences, and activities to assist in the learning transaction.

Instructional strategies Activities that teachers design and the way instruction occurs around such activities (what learners must do and how they must do it) in order to help them attain learning outcomes.

Instructional television A distance education strategy that uses television broadcasts to instruct learners in a particular skill or concept. The medium can be active or passive. *Telesecundaría* (México) is an example of instructional television programming.

Intelligent tutoring system (ITS) A learning technology that is an outgrowth of CAI and dynamically adapts learning content to objectives, needs, and preferences of a learner via a series of algorithms that adapt learning to learner inputs. ITSs are frequently AI-driven.

Interactive audio instruction (IAI) A distance learning method that encompasses a variety of forms of audio instruction for teachers and learners. IAI's methodology blends audio-based lessons, teacher professional development and support materials, and simultaneous instruction for teachers and learners via the audio teacher. It requires teachers and students to react verbally and physically to prompts, commands, questions, and exercises posed by audio characters. Lessons can be delivered via prerecorded CDs or audiotapes (narrowcasting) or via a live radio broadcast.

Interactive learning See Active learning.

Interactive radio instruction (IRI) A one-way distance education system for students and

teachers that combines radio broadcasts with active learning techniques. IRI is a subset of IAI.

Interactive television (ITV) Television programs with one-way video transmission, allowing learners to see the instructor at a distance. With the advent of compressed video, ITV programs that allow both students and teachers to see, hear, and respond to each other via video and audio in real time are increasingly common.

Interactive Voice Response (IVR) An automated phone system technology that allows incoming callers to access information via a voice response system of pre-recorded messages without having to speak to a person. The user also can utilize menu options via touch-tone keypad selection or speech recognition to have their call routed to a specific person or department. IVR requires only a basic cell phone and allows for various audio content.

Interactive Whiteboard (IWB) A large digital display board, also known as a "smart board" or "electronic white board," that connects to a computer and projector and then displays the computer's desktop onto the board's surface, where users can control the computer with a pen, their finger, or another device. The board is typically mounted on a wall or floor stand. Various accessories enable additional interactivity, and learners can view games and multimedia applications stored on an instructor's computer and interact with the content either alone or in groups.

In an online environment, "whiteboards" are a different application, though they function in much the same way as a physical IWB. For instance, in webinars or online meetings whiteboards allow participants to simultaneously view one or more users drawing on an on-screen blackboard, presenting information, or running an application from their computers. *Jamboard* is an example of a digital whiteboard.

Internet A network of networks on a worldwide scale through which millions of computers are interconnected via a set of computer protocols.

Internet protocol television (IPTV) A system through which Internet television services are delivered via broadband Internet access networks, rather than through traditional radio frequency broadcast, satellite signal, or cable television formats. IPTV services may be classified into three main groups: (1) live television, with or without interactivity related to the current television program; (2) time-shifted programming, replaying a program that was broadcast hours or days ago or replaying the current program from the beginning; and (3) video on demand (VOD), a catalog of videos not related to television programming, such as streaming services like Netflix or Amazon (Hanna & Scarpati, n.d).

Learner-centered instruction An instructional approach that advocates that learners bring unique prior knowledge, experience, and beliefs to a learning situation; construct knowledge in multiple ways using a variety of authentic tools, resources, experiences, and contexts; learn by interacting socially and collaborating in order to solve real-world problems; and create their own understanding of situations. It views learning as an active and reflective process. See also *constructivism*, *active learning,* and *student-centered learning.*

Learning analytics The measurement, collection, analysis, and reporting of data about learners and their contexts for purposes of understanding and optimizing learning and learning environments, providing early warning to instructors about at-risk learners, providing personalized supports to learners, and improving accountability or product design.

Learning management system (LMS) A digital platform that enables instructors to organize and post course content materials over the Internet for their learners. Examples include *Moodle*, *Canvas*, and *Blackboard*. Also known as a *course management system.*

Learning object A small chunk of information (text, video, audio, an image) delivered over the

Internet that serves as an object of study. Learners and instructional designers can use, reuse, adapt, and save learning objects in a number of different learning contexts.

Liquid Crystal Display (LCD) A flat, thin display device typically referring to a type of monitor found in flat-screen displays like those in laptops, tablets, digital watches, and other similar devices. LCDs use liquid crystals to switch pixels on and off to reveal a specific color. They also block light emanating from the back of the screen instead of creating the light themselves. This allows for a better picture quality, support for high resolutions, and the use of less power than was the case with older cathode ray tube displays (Fischer, 2021).

Massively Multiplayer Online Role-Playing Games (MMORPG) A video game that takes place in a persistent state world (PSW), with thousands or millions of players developing their characters in a role-playing environment. The virtual world in which the game takes place is immersive and never static. Even when a player is logged off, events are occurring across the world that may impact the player when he or she logs in again. The most popular (as of July 2022) is *World of Warcraft* (Techopedia, 2017).

Massive Open Online Course (MOOC) An online course that typically is asynchronous. It is massive in that it can accommodate thousands of learners, and open in that anyone can register and take the course (though there are MOOCs that charge a fee for the course or for certification).

Media Means and ways of distribution and communication—from text, audio, graphics, and animated graphics to full-motion video. Multimedia is the mix or combination of media.

Metadata Data about data, or a "data dictionary" that provides information about data. Examples include information about data (for instance, types or compatibility issues), about files (versions, date of creation or updating, and author's name), or about content or applications (standards, specifications, software, or application versions). Metadata are different from tags, which are keywords that allow users to improve their searching capacity, because metadata usually contain a set of specifications and are structured according to a standardized concept using a well-defined metadata scheme. Metadata are particularly important for open educational resources.

Micro-learning An emerging learning theory according to which people learn more effectively if bite-sized information is delivered in small units that are easy to understand and apply. Because mobile devices present short chunks of information at a time due to small screen size, they are effective micro-learning tools.

Mixed reality A merging of real and virtual worlds to produce new environments and visualizations, where physical and digital objects coexist and interact in real time.

Mobile device Any digital device, such as a cell phone, e-reader, or gaming device, which is small and light enough to be portable and self-contained enough to allow the user to complete specific tasks.

Mobile learning Also known as "m-learning," this is learning through portable, handheld electronic devices, generally with wireless communication capabilities.

Mode The delivery approach by which learning takes place. In distance technologies, this can be print, radio, television, or Web-based technologies. In formal learning institutions, such as teacher training colleges, institutions of higher education, and universities, it may be *single-mode*, where courses and programs are mediated by either distance or contact-based methodologies. Or it may be *dual-mode,* or *mixed-mode,* where courses and programs may be mediated by a range of distance, resource-based, and contact-based methods (UNESCO Insititute for Lifelong Learning & Commonwealth

of Learning, 2021, p. viii). A hybrid institution is a mixed-mode university or school but with delivery offered both online and in-person.

MP3/MP4 Audio compression standards developed by the Moving Picture Experts Group (MPEG) for encoding audio so that it can be transmitted via the Internet or another network. An MP3 player is a handheld device which allows a user to listen to MP3 files.

Multichannel learning A vehicle whereby the interaction between learners and the learning source takes place through a variety of communication channels or modes (for example, print, television, email, Internet, and video).

Multimedia Messaging Service (MMS) Similar to a text message, MMS is a standard method for sending and receiving messages that contain multimedia to and from a mobile phone over a cellular network.

Network An arrangement of objects or people interconnected electronically. In telecommunications, networks are transmission channels interconnecting all client and server stations.

Non-fungible tokens (NFTs) Cryptographic assets on a blockchain with unique identification codes and metadata that distinguish them from each other. Unlike cryptocurrencies, they cannot be traded or exchanged at equivalency (Sharma et al., 2022).

Norm-referenced assessment An assessment in which a learner's or a group's performance is compared to that of a "norm" group. The test measures learner achievement against the norm—a mean level of performance—not against a criterion standard.

Notebook A mini-laptop computer that is cheaper and more portable than a standard laptop.

Offset printing This is a type of printing that uses "aluminum plates to transfer ink onto a rubber sheet. The image is then rolled onto the printing surface. This printing method is considered 'offset' because the ink is not transferred to the paper directly" (The InkTank, 2021).

One-way audio Audio information broadcast only in one direction, not enabling the listener to respond to the audio or communicate with the broadcaster via the same means.

Online The state of connectedness of a computer to a network. Online is the opposite of offline. In this guide, "online" is synonymous with "Web-based."

Open education resource (OER) Open and free educational content (including metadata) for educational institutions and end users such as teachers, students, and lifelong learners. Since OER is liberally licensed for reuse in educational activities, it is free from restrictions on modifying, combining, and repurposing. Ideally, OER should be designed for easy reuse, in that open content standards and formats are being employed, and it should employ open-source software for which the source code is available, open application programming interfaces, and authorizations to reuse Web-based services.

Open enrollment A term with multiple meanings depending on the jurisdiction. For instance, open enrollment may mean that learners may enroll in a distance program regardless of prior qualifications or standardized test scores, as with open universities. In the United States, open enrollment often refers to situations in which *students* may take classes (typically online or via virtual schools) in a school district that is not their own. Finally, open enrollment can refer to self-placed, online classes in which a learner begins and finishes at any point in the course trajectory as he or she deems necessary.

Open learning This refers to policies and practices of openness in entry requirements (with minimal or no restriction on qualifications), choice

of courses, place of study, and time of study (UNESCO, 2019, as cited in UNESCO Insititute for Lifelong Learning and Commonwealth of Learning, 2021, p. ix). It is both an educational philosophy and an instructional system whereby learning happens where, when, and how the learner requires it, and in which the learner controls many facets of the learning process.

Open-source software (OSS) Software for which the underlying programming code is available to users so that they may read it, amend it, and build new versions of the software incorporating their changes. OSS comes in many types, differing mainly in the licensing term under which (altered) copies of the source code may be redistributed. Sometimes referred to as Free/Libre Open-Source Software (FLOSS), the significant difference is that OSS is usually, but not always, free, whereas FLOSS is always free.

Open university A distance education institution in which learners from a particular nation and, increasingly, other nations enroll and study at a distance using print-based materials, phone, audio, video, television, and the Internet. Open universities typically admit all learners regardless of prior academic records or accomplishments and allow them to take courses as their schedule permits. The best-known and best-regarded open university is that of the United Kingdom. Within Asia, open universities are so large (having hundreds of thousands of learners) that they are often called "mega-universities."

Outcome evaluation A type of summative evaluation that measures changes in designed outcomes, particularly as they affect the target group.

Performance-based assessment A form of alternative assessment in which learners are asked to create, produce, or do something, often in settings that involve real-world application of knowledge and skills.

Peripheral Any type of computer hardware that is added to a host computer in order to expand its abilities. Examples of peripherals include printers, scanners, and many assistive technology devices such as joysticks.

Place-shifting technology A piece of "firmware" (computer software that controls a specific device or piece of hardware) to allow anyone with a broadband Internet connection to forward live or prerecorded video streams from their home television set, DVR, or other video source (such as a DVD player) for remote viewing on a computer, tablet, or mobile phone at any location with a high-speed Internet, cellular data, or Wi-Fi connection.

Podcast (from i*Pod* broad*cast*) An audio broadcast that has been converted to an MP3 or other audio file format for playback in a digital music player or on a computer. Podcasts can be automatically downloaded to a computer via a subscription or RSS feed. Video-based podcasts video are sometimes referred to as *vodcasts,* though this term is fading away.

Polar pattern A microphone's directionality or pickup pattern. It is the three-dimensional space surrounding the microphone capsule where it is most sensitive to sound. There are six main polar patterns: omnidirectional, cardioid, super cardioid, hyper cardioid, ultra-directional, and figure of 8 (Tobias, 2016).

Post In an online environment, a written communication uploaded to a blog, discussion forum, bulletin board, wiki, or e-list. The term is used both as a noun and a verb.

Printcasting A tool that allows users to create their own online magazines. It takes its name from the *Printcasting* website that offers that service; other examples of social publishing media sites include *Kobo* and *Lulu.*

Problem-based learning (PBL) An instructional strategy in which learners solve a real-world problem. First developed for medical schools,

PBL activities often are loosely structured, involve cooperative teaming, anchor all learning to a larger task or problem, and support the learner in developing ownership of the overall problem or task. Tasks are generally complex, involving higher-order thinking. Learners must often identify resources, overcome problems with data, and decide upon the content and format of the information gathered.

Project-based learning/Project-oriented learning An instructional philosophy in which learning is organized around a driving question or issue, learners collaborate to address this issue, find information, and then present their findings. Project-based learning, like problem-based learning, is complex, involves learner collaboration, and is characterized by an elevated level of learner autonomy. Unlike problem-based learning, with which it is erroneously conflated, a project-based approach may not involve a real-world problem (many project-based activities are *simulations* of real-world issues) and is not as loosely structured as problem-based learning.

Quality assurance A set of systematic management and assessment procedures used to monitor performance against objectives or standards and to ensure the achievement of quality outputs and quality improvements.

Quality control A procedure or set of procedures to ensure that products and services adhere to a set of predetermined standards or criteria for quality. It is part of a quality assurance system.

Quasi-experimental design An evaluation design that uses many, though not all, of the characteristics of an experimental design. For example, quasi-experimental designs use comparison groups rather than randomized groups.

Quick response (QR) code A two-dimensional image that consists of black modules arranged in a square pattern on a white background. QR codes store text, URLs, or other data. To use QR codes requires (1) a phone with a QR code generator (an app that is freely downloadable from Apple or Android app stores), and (2) a QR code reader. Some phones automatically include QR code generators and readers. Some applications, such as *Canva,* include QR code generators.

Real Simple Syndication (RSS) An Extensible Markup Language (XML) based format that allows for the syndication of Web content. Content can include data such as news feeds, events listings, news stories, headlines, project updates, or excerpts from discussion forums. Browsers allow users to set up automatic RSS subscriptions (feeds) so that content is delivered automatically from a website to the user's computer.

Reliability In evaluation, a measure accorded to an instrument that can be used repeatedly with distinct groups of similar subjects and yield consistent results. There are a number of ways to measure the reliability of an evaluation instrument.

- Test/retest method: The same instrument is used with the same group but at separate times, and results are then compared.
- Create two forms of the same instrument with slight variations in items, administer the instrument, and then compare results.
- Administer half of the instrument with one group and the other half with the same or a similar group, and then compare results.
- Joint-rater exercise: Where two individuals administer the same test to the same group and then examine the similarities and differences in item responses.

Most reliability uses statistical methods such as Cronbach's Alpha or the Kuder-Richardson Formula 20 (KR20).

Rich media A broad term for interactive media that mix audio, video, text, and animation. It is often used to classify high-graphics video or multimedia.

Rubric A scoring tool that contains criteria for scoring, descriptors of the criteria, and a scoring

scale. Rubrics are matrix-like in their organization and can be *analytic* (with highly detailed descriptors pertaining to each criterion under each level of scoring), *holistic* (more general, with less descriptive information) or *single point* (with only the desired performance level, leaving blank the levels leading to this).

SCORM (Sharable Content Object Reference Model) A set of technical standards for eLearning software products. SCORM defines how to create "sharable content objects" (SCOs) that can be reused in different systems and contexts and governs how online learning content and LMSs communicate with each other.

Screencasts/video screen capture Digital recordings of an event that occurs on a computer screen. They typically contain audio narration and are oftentimes "how-to" videos—for example, how to use a software tool or how to perform a certain procedure. There are numerous screencast or screen capture tools such as *SnagIt, Camtasia, Movavi* or *Screencast-O-Matic*. Screencasts can be recorded, saved as MP4 files, and saved onto *YouTube* or storage platforms such as *Box* or *Drive*.

Server A computer that provides a service across a network. The service may be file access, login access, file transfer, printing, and so on. Many institutions are bypassing physical servers in favor of cloud computing and "software as a service," storing all content and files online and using only Internet-based applications.

SIM (Subscriber Identity Module) card A memory chip used in cellphones. Some SIM cards are portable and can be removed from a phone, while others cannot be removed.

Simulation A computer program (often Web-based) that models or imitates an entity, state of affairs, or process. Simulations provide users with experiences that might otherwise be unavailable due to cost, difficulty, or logistics. Some examples are flight simulation programs used to train airplane pilots, virtual dissection kits for learners to dissect a frog or cat in a biology class, or Web-based simulations to teach scientific or mathematical concepts. An example of the latter is *PhET Interactive Simulations* at the University of Colorado Boulder (USA).

Single-mode distance institution A distance learning institution in which teaching, learning, and administrative systems are designed and dedicated to the provision of distance education. Examples include many open universities. Single-mode universities are now more commonly known as online universities.

Smart phone A mobile phone that has many of the same functions as a handheld computer, including email, photo and video capture, document viewing and development, and Internet browsing. Its functioning is supported by apps.

SMS (short messaging service) A text message composed on and sent via cell phone.

Social constructivism An aspect of constructivist learning theory, advocated to large degree by the Russian psychologist Lev Vygotsky, who stressed the criticality of the learner's social interaction with more knowledgeable peers or colleagues. Social constructivism essentially states that learning is developed through personal relationships and with participants in a shared learning experience.

Social media User-created media (video, audio, text, or multimedia) that are published and shared in a social environment, for example, a blog, wiki, or video hosting site such as *Facebook*, *Instagram*, *YouTube,* or *Flickr*.

Social networking sites Internet sites that enable the creation of online communities of people who share interests and activities, or who are interested in exploring the interests and activities of others. Most social network services are Web-based and provide a variety of ways for users to interact, such as posting and instant messaging services. The best-known examples of social networking sites are *Facebook* and *Linked In*, both of which

contain professional interest groups such as those for teachers.

Software A set of instructions for the computer. A series of instructions that perform a particular task is called a program. Two major categories of software are system operating software and application software.

Student-centered learning An instructional approach that advocates that learners bring unique prior knowledge, experience, and beliefs to a learning situation; construct knowledge in multiple ways using a variety of authentic tools, resources, experiences, and contexts; learn by interacting socially and collaborating in order to solve real-world problems; and create their own understanding of situations. It views learning as an active and reflective process. See also *active learning* and *learner-centered instruction.*

Summative assessment A final assessment, such as an exam administered to learners for the purpose of judging performance, grading, or certifying a learner's level of knowledge.

Summative evaluation An evaluation occurring at the end of a program or project designed to determine the program's overall effectiveness or worth.

Synchronous learning Individuals learn at the same time but in separate places. This might involve instructors and learners interacting at the same time via distance using a phone, video conferencing tools, or via chat.

Tablet A wireless portable computer the size and thickness of a notepad or book. It functions as the user's primary personal computer, as well as a note-taking device in some cases. The most well-known tablet is the iPad.

Tagging A process by which users can provide metadata (data about content) about particular Web-based content in order to facilitate searching and sharing. It is particularly common in social bookmarking sites such as *Pinterest* and photo-sharing sites such as *Flickr,* which are also called *collaborative tagging* sites. Though tagging can create metadata, metadata are not necessarily tagging.

Teleport A regional telecommunications network that provides access to communications satellites and other long-distance media. "Teleporting" is also used as a verb to describe users moving from one virtual world or immersive environment to another.

Tethering Connecting a cell phone or other mobile device and a computer via a cable or wireless connection. The purpose of tethering is for the mobile device to gain Internet access via the connection to the computer.

Total cost of ownership The financial estimate of all costs associated with a particular program, purchase, or intervention. Using technology as an example, it includes all capital and recurrent costs for equipment, connectivity, supplies, supporting infrastructure, training, and support for a fixed period (e.g., five years or a decade).

Thin client A thin-client system is a low-cost computing and "virtual desktop computing model. It runs on the resources stored on a central server instead of a computer's resources" (Gillis, 2021).

Two-way audio A voice-only communication system that allows for two-way communication—listening and speaking. Audio can be transmitted via phone, satellite, the Internet, or high- frequency radio. The best-known example of two-way audio instruction for distance learning is Australia's Schools of the Air.

Ubiquitous learning Learning via mobile technologies so that a course of study can be accessed any time, any place. It often is synonymous with 1:1 computing.

Universal design for learning (UDL) A design principle—for buildings, technology, the environment, industrial products, and so on—

that aims to be barrier free. UDL advocates equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use (CAST, Inc., 2022).

Universal Instructional Design (UID) This is the design of instructional materials and activities that make learning goals achievable by "individuals with wide differences in abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage, and remember" (Burgstahler, 2007, p. 1, as cited in Elias, 2010).

USB flash drive A Universal Serial Bus, or USB, is a small, portable flash memory card, also known as a thumb drive or pin drive, which plugs into a computer's USB port and functions as a portable hard drive. USB flash drives are small and easy to use and can plug into any computer with a compatible drive.

Validity In evaluation, validity refers to the accuracy of an assessment—whether or not it measures what it is supposed to measure. There are generally considered to be at least three types of validity. One is *content* validity—the extent to which the content of the test matches the instructional objectives. The second is *construct* validity—the extent to which a test, instrument, or assessment corresponds to other variables, as predicted by some rationale or theory. A third is *criterion* validity—the extent to which scores on the test agree with some externally established criterion or criteria.

Evaluations are concerned typically with two types of validity: *internal* (Did the innovation make a difference to the population under study?) and *external* (Can the effects of the evaluation be generalized to other populations, situations, or locations?).

Videocassette recorder (VCR) A magnetic videotape recorder for recording and playing back television programs or prerecorded video.

Videoconferencing Two-way, real-time transmission between people in different locations of audio and video via a local area network or the Internet. Videoconferencing can be as simple as using *Zoom* or may involve hardware and software solutions furnished by companies such as Poly.

Virtual learning See *Online learning* or *eLearning*.

Virtual reality Computer-simulated environments that can mimic the real world as well as imaginary ones. VR consists of virtual reality hardware (headsets and motion controllers) and virtual reality software—a platform that uses computer vision and 3D modeling to "generate, move and clone images in a digital environment" (Mattoo, 2022).

Virtual schools An institution, sometimes called a "cyber school," that teaches courses entirely or primarily through online methods. Though there are tens of thousands of commercial and non-accredited courses available online, the term "virtual school" is generally reserved for accredited schools that teach a full-time (or nearly full-time) course of instruction designed to lead to a degree. At the primary and secondary level, accreditation means that virtual schools tend to receive public funding. Some publicly funded and private universities also provide accredited online degrees.

Virtual world These are online simulated and persistent environments. Thousands of users can interact simultaneously within simulated three-dimensional spaces via avatars (graphical representations of the user) (Messinger et al., 2009, p. 204). Avatars are usually depicted as textual two- or three-dimensional graphical representations, although other forms are possible—auditory and touch sensations, for example. Virtual worlds are often an important feature of online gaming. They can be self-determined, theme-based, community-based, and they can be organized for adults or children (Messinger et al., 2009).

Voice over Internet Protocol (VoIP) A transmission technology for delivery of voice communication over the Internet, also known as Internet telephony. By employing software such as *Skype* or *FaceTime*, users can access the digital audio features of the Internet to talk with another person using a computer. Typically, computer-to-computer calls are free, and computer-to-phone calls involve a nominal charge.

Web 2.0 The second generation of the World Wide Web. While Web 1.0 was largely a "read" medium, Web 2.0 is a "read/write" medium in which users create and publish content without complicated authoring tools such as Web design software. Examples of Web 2.0 content include blogs, wikis, and social networking sites. The term "Web 2.0" is often used synonymously with "social media," though social media is a category of Web 2.0 applications.

Webcast The equivalent of traditional television and radio broadcasting, transmitted live over the Internet, or a recorded webinar that is archived and able to be viewed asynchronously. Webcasts can be used as stand-alone events for which participants register or as a component of an online course, conference, or session (Commonwealth of Learning, 2008).

Webinar An interactive, Web-based seminar in which instructors and learners interact using documents such as *PowerPoint* presentations, video, audio, and chat tools.

Wireless The ability of one Information and Communication Technology (ICT) device—for example, a computer or cell phone—to communicate with another without cables or wires.

World Wide Web An information distribution method that operates via the Internet to enable users to access information resources linked to uniform resource locators (URLs) or other codes. Webpages are displayed in browsing software and may contain links (often called "hypertext") to other resources.

xAPI Experience Application Programming Interface, or xAPI, is an eLearning specification that makes possible data collection about the wide range of experiences a person has within online and offline learning activities. xAPI uses a shared format for both receiving and sending data (xAPI.com, 2023).

XML (extensible markup language) A flexible text format for creating structured computer documents on the World Wide Web.

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