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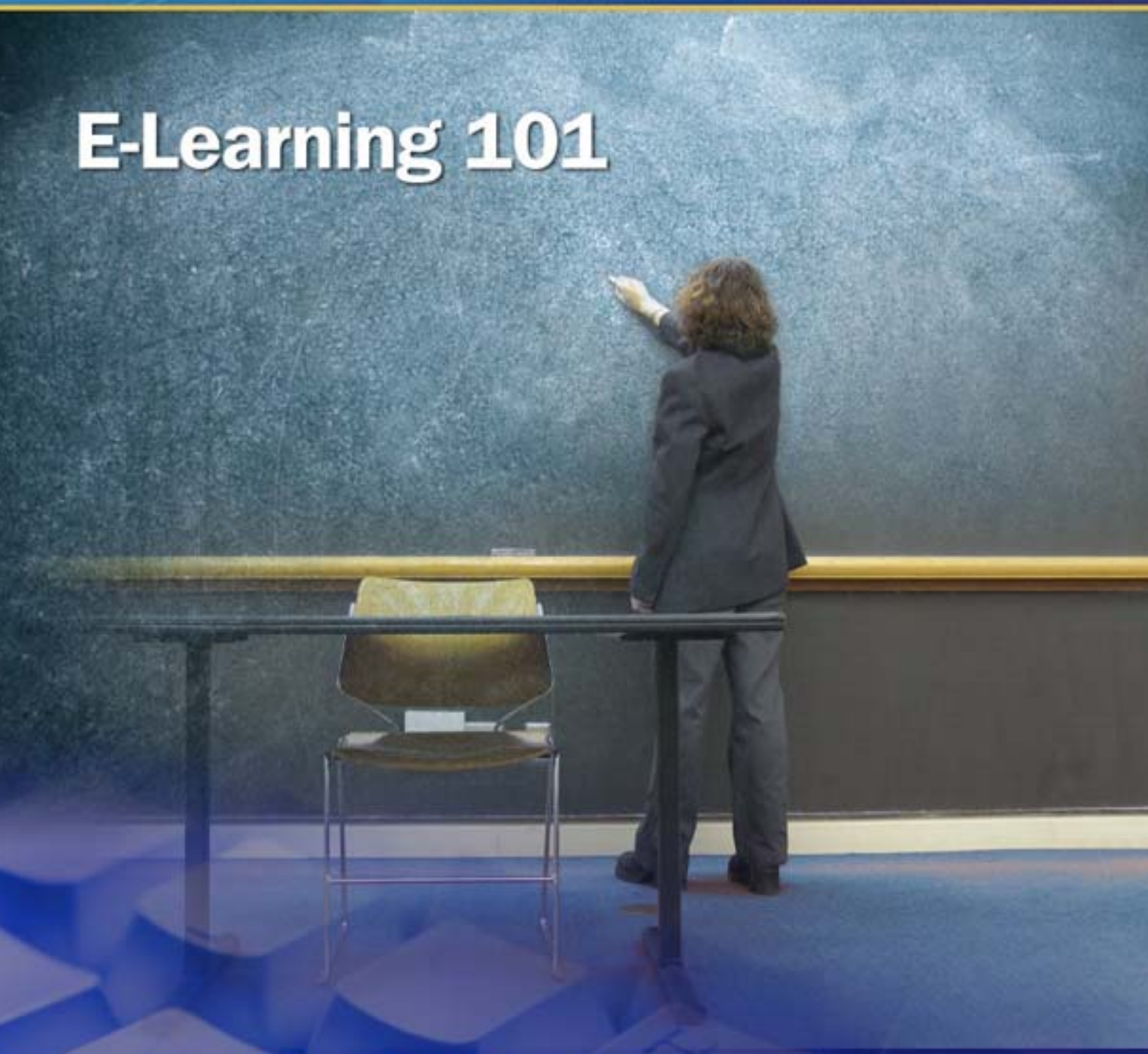
E-Learning 101



An Introduction to E-Learning, Learning Tools and Technologies

By Janet Clarey

Brandon Hall Research

Independent, Innovative Intelligence

E-Learning 101: An Introduction to E-Learning, Learning Tools, and Technologies

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Table of Contents

About the Author ***5***

Introduction 6

The Learning Profession 7

The Growth of E-Learning 9

What is E-Learning? 11

Instructional Design 14

Instructional Design Methods 18

Methods of Delivery 22

Learning Management Systems (LMS) & Learning Content Management Systems (LCMS). 23

E-Learning Evaluation 25

E-Learning Authoring Tools 27

Emergent Technology and Trends 28

E-Learning Glossary 30

FAQs 47

E-Learning Reports 55

References 56

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About the Author

Janet Clarey has been a researcher and writer at Brandon Hall Research since 2005. Her background is in corporate training where her focus was instructional design and implementation of competency-based technical training programs. She is an experienced virtual & classroom trainer/facilitator and courseware designer. She has served as project manager for several large training initiatives including the implementation of learning management, learning content management, and talent management systems. She has an M.S. in Education from Capella University with a specialization in Instructional Design for Online Learning and was recently admitted to the Doctoral Program in the area of Instructional Design, Development, and Evaluation at Syracuse University.

Introduction

Learning technologies change quickly, and the language and components of the learning industry can be confusing. Many new and different terms, acronyms, and even spellings are thrown around by gurus, vendors, industry organizations, and learning practitioners. Novice learning practitioners and even long-time instructors transitioning from classroom instruction to e-learning need to be able to communicate about e-learning and learning technologies to gain support for their organization's training initiatives. Failure to have a basic understanding of e-learning and learning technologies in today's corporate environment will prevent learning practitioners from having meaningful conversations about e-learning, which may ultimately negatively impact business results. Similarly, those responsible for making decisions around an organization's e-learning strategy need to have a basic understanding of the technology, tools, terminology, usage, methods of delivery, design considerations, infrastructure, and evaluation of e-learning solutions. This paper provides basic knowledge and an understanding of e-learning that will enable readers to describe the e-learning "space" to others and to understand the foundation and tools for making decisions around, and gaining support for, their organization's e-learning strategy.

Assumptions

Because you're reading about e-learning, we're assuming that you've heard of the Internet, that you know what a computer is, and, perhaps, you have one or know how you can access one – at work, at the public library, at home, or at school. Although e-learning can encompass other forms of delivery (CD, DVD, etc.), most e-learning is delivered in a Web-based environment. If you'd like to learn more about the technology used for e-learning, go to http://www.howstuffworks.com and search on "PC," "Internet," and/or "e-learning."

The Learning Profession

Past

In 1979, Jan Margolis, then The American Society for Training and Development (ASTD) President, described the learning profession simply as "training." There were no learning competency models, and the industry was transitioning into its role in the new world of "human resources."

In "The Trainer's Handbook," a book published in 1980 by AMACOM, author Garry Mitchell described the role of the trainer. He described the trainer as a leader charged with the following:

1. Setting the agenda and keeping track of time
2. Maintaining training objectives
3. Protecting the rights of all participants
4. Listening
5. Summarizing the material
6. Reviewing
7. Focusing the attention of the group
8. Handling challenges to your authority
9. Involving silent members
10. Providing a modus operandi

The details in these functions included breaks, temperature, lighting, scenery, seating, visibility, etc., those things we associate with traditional instructor-led training held in a physical classroom. Some of the technology staples of the day (and still used today) were filmstrips and overheads. Some things we're probably glad to get rid of - like smelly markers!

Present

Today, ASTD describes themselves as an association dedicated to "workplace learning and performance." The organization has identified four unique roles within the learning profession as the foundation for their Professional Certification Program in Learning and Performance. These roles include Learning Strategist, Business Partner, Project Manager, and Professional Specialist.

The competencies for workplace learning and performance professionals today include an extensive list of skills, knowledge, abilities, and behaviors. There are also many more jobs

associated with training – from Flash Developers to E-Learning Managers to Online Facilitators. In fact, the Department of Labor lists “Director of Blogging” as a “new” job.

As is the case with many newer job descriptions, several of the professional areas of expertise within the roles of learning professionals involve technology. For example, "Designing Learning" lists the following areas of expertise:

> Designing, creating, and developing learning interventions to meet needs.

> Analyzing and selecting the most appropriate strategy, methodologies, and technologies to maximize the learning experience and impact.

Another industry organization, Chief Learning Officer (CLO), has a new CLO Academy (in conjunction with Capella University, an online university) offering a Learning Professionals Certificate, which lists the following core competencies for learning professionals:

> Strategic Management

> General Management

> Knowledge Management

> Leadership Skills

> Learning Methods and Concepts

As you can see, the profession has developed to encompass many areas – much of it driven by technology. CLO Editor in Chief Norm Kamikow describes the CLO certificate program a “future-focused program that taps into all manners of modern learning delivery, from the group discussions to asynchronous, instructor-led, online education.”

Future

The future of the profession points to further evolution toward total human capital management, performance and talent management, knowledge management, leveraging of technology to provide granular chunks of content called learning objects, and collaboration. There is also a focus on aligning training to the business goals and becoming true strategic partners.

New tools like blogs, wikis, podcasts, and other social learning make training more informal and highly collaborative. That authoritative training “leader” from the 1970s may function more as a facilitator in today’s environment.

One thing hasn’t changed – a focus on the learner, learning outcomes, and sound instructional design. Training today is highly individualized and designed to provide learner support and direction with content presented in the proper context. This has always been the goal of effective instruction.

The Growth of E-Learning

In 2005, instructor-led classroom-based delivery accounted for 61-68 percent of the average organization's training delivery methods, down from 80 percent in 1999 (ASTD, 2006). In contrast, the use of technology as a delivery method increased from about 8 percent in 1999 to between 28-38 percent in 2005 (ASTD, 2006). This shouldn't be viewed as the imminent death of the classroom. Developing and delivering face-to-face training is still an important component of most corporate learning programs. Rather, it should be viewed as a snapshot of an industry leveraging technology to provide learning with greater range, better integration with work, and greater efficiency.

Based on this industry snapshot, the ability to understand, articulate, evaluate, recommend, and select appropriate and effective learning technologies should be viewed as a critical skill in today's workplace learning environment. Many incumbent instructors may have tried to deliver instruction online unsuccessfully and may even view it as ineffective. This may be because the same objectives and methodologies used in the traditional classroom change dynamics in the form of loss of social-contextual cues in the online class. Instructors have to learn new approaches using technology – they must become 'e-literate.'

A Brief History

Although e-learning has only been around since the 1960s, distance education – which e-learning can be categorized under – has evolved over the past 100-150 years when study was offered via 'post.' This type of study - correspondence study that targeted adults - was incorporated at a number of universities in the late 1800s through the early 1900s. Technologies were introduced as a tool to deliver learning in the 1930s, first via TV and then via satellite in the1960s-1970s (Schlosser, 1994). Both are still in use today. Distance education technologies continued to evolve significantly over the past 30+ years, and, as a result, rapid change in delivering learning is occurring throughout the world in conjunction with technology advances – primarily the computer and the Web.

Two major developments over the past several years have significantly impacted the evolution of e-learning – the events of 9/11 and technology (primarily bandwidth). The events of 9/11 caused a major socio-cultural disruption in society, primarily in the U.S., that influenced nearly every facet of business, including corporate education.

After 9/11, companies needed to train their employees but were hesitant to allow employees to travel and were uncertain about the economy. The time was ripe for e-learning as a way to train large numbers of geographically dispersed employees on everything from terrorism recognition to diversity training. E-learning became a major force for delivering training after 9/11 and has continued to grow and evolve since.

Immediately after 9/11, multiple live face-to-face training events were cancelled. The American Management Association reported an immediate 30 percent drop in enrollment (Caudron, 2002). In contrast, training technology companies – those providing e-learning, videoconferencing, CDs, and satellite-delivered content – were seeing significant increases in business. Videoconferencing minutes at the world's largest conferencing specialist went up 40 percent in the weeks after the attacks (Caudron, 2002). In short, when it came to using technology to train, the post-9/11 landscape of the corporate training world would change significantly. In fact, there was a 100 percent increase in the percentage of corporate dollars dedicated to e-learning (4.2 percent to 8.5 percent) between 2001 and 2004 (ASTD, 2004), around $11 billion of corporate training funds in 2003 alone (Rouin, 2004).

Although e-learning had been a part of many corporate training programs for several years, it did not have a strong foothold until recently. E-learning has really come into its own in the past several years. Face-to-face instruction is still the primary method of instruction. An ASTD survey shortly after 9/11 indicated the following commonly mentioned changes in training:

> A shift to distance technologies and e-learning

> Travel stopped or reduced

> Different training topics became priority – diversity, security, stress management, change management

> Budget restrictions, layoffs, business slowdowns

What makes this socio-cultural disruption in American society and the subsequent increase in the use of technology in education noteworthy is that it has stuck. E-learning is now a staple of corporate training departments.

The second major development that has had a significant impact on the evolution of e-learning in the past several years is technology, especially increased bandwidth as a means for offering rich multi-media content.

What is E-Learning?

Introduction

The meaning of the letter 'e' is vast and encompasses many fields – from astronomy to video games. Used in technology, 'e' means electronic. E-learning, then, is e-(lectronic) learning, just as e-mail is e-(lectronic) mail. The 'e' represents the means by which we receive or access learning – electronically, typically on the Web (online) via a Web browser. This 'e' has been described as the 'how' and the 'learning content' the 'what' (Clark & Mayer, 2003).

Notable definitions

Existing literature defines e-learning as instruction accessed electronically on a computer. This instruction could be a class, a course, or a discussion and could look like a book, a movie, a Web page, a game, or a combination of those things. E-learning can be bought or created from scratch. Some other notable definitions of e-learning are listed below:

1. E-Learning is instruction that is delivered electronically, in part or wholly – via a Web browser, through the Internet or an intranet, or through multimedia platforms such as CD-ROM or DVD (Hall, 1997).
2. E-Learning is a structured, purposeful use of electronic system or computer in support of the learning process (Allen, 2003).
3. E-Learning covers a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes delivering content via the Internet, intranet/extranet (LAN/WAN), audio and videotape, satellite broadcast, interactive TV, and CD-ROM (ASTD, 2001).
4. E-learning is training delivered on a computer (including CD-ROM, Internet, or intranet) that is designed to support individual learning or organizational performance goals (Clark and Mayer, 2003).
5. Web-based training [an alternate term for e-learning] is the integration of instructional practices and Internet capabilities to direct a learner toward a specified level of proficiency in a specified competency (Conrad, 2000).

How Do You Learn Online?

You don't have to be a computer geek to learn online. In fact, learning how to use a computer can be accomplished by taking an online course (e-learning). It's kind of like learning to cook while reading a cookbook (no interactivity), watching someone cook and practicing (some interactivity), or cooking an entire dinner with feedback and coaching from an expert chef (high interactivity). How quickly or deeply someone learns depends on the level of interactivity

received. It also depends on how someone learns. Different people learn in different ways, and e-learning accommodates different learning styles, abilities, languages, ages, and cultures. This is true in e-learning and traditional face-to-face training. In the past, students have learned in a physical classroom with others, on-the-job, or with a book like a tutorial, often with a test. E-learning is the same – sometimes the learner is alone, sometimes he or she is learning with others at the same time, and sometimes he is learning with others at different times.

Who Uses E-Learning and How is it Used?

All types of organizations use e-learning – private sector/for profit, non-profit, governments, and educational institutions. Organizations use e-learning for many reasons – to save money, to reach geographically dispersed groups, to provide "anywhere-anytime" learning, to provide consistency, to ensure compliance with regulations, and to improve productivity, to name just a few. E-learning is often used for some of the following reasons: to provide introductory/orientation training, to provide remedial training, to provide certification training, to deliver academic courses (for credit), to promote products and services, to support organizational initiatives, to offer training to geographically disparate personnel, to offer a variety of learning opportunities, to coach and mentor learners, to standardize training/knowledge, and to provide software training.

Organizations can purchase non-customized e-learning commercially off-the-shelf or can purchase customized content. Organizations can also create their own e-learning using various courseware development tools often called authoring tools (because you are the "author" of a course). Many organizations use a combination.

Alternate Terms and Spellings

There are at least as many definitions of e-learning as there are spellings, alternate terms, and people using it. This is most likely because the evolution of technology brings with it new terminology. It may even have something to do with a writer's use of spell check, a vendor seeking to differentiate a product or service in the marketplace, or whether or not it's at the beginning of or within a sentence. Alternate spellings include E-Learning, E-learning, e-Learning, e-learning, eLearning, and Elearning. A Google search of the Internet today reveals many more hyphenated spellings than non-hyphenated spellings, so the recommended usage includes a hyphen.

Some alternate terms for e-learning include Web-based training (WBT), online learning, virtual learning (meaning non-physical), distance education, distance learning, and online training (OLT). Before widespread Internet usage (and still in existence) was computer-based training (CBT), the term frequently used to describe training that is delivered via CD-ROM, mainframe, or

network to a learner's desktop. Online learning and Web-based training seem to be the most popular interchangeable terms for e-learning.

You should know that e-learning is not the panacea for all organizational learning. There are advantages and disadvantages associated with e-learning. Advantages include cost, geographical reach, use of multimedia, availability, portability, consistency, learner control, up-to-date content, no duplication, and shorter learning time. Disadvantages include a lower level of interactivity, initial development time and cost, technological limitations (bandwidth, access), developer limitations, learner motivation, learning styles, and preferences.

Instructional Design

Traditional classroom instruction integrates varied teaching strategies (lecture, homework, small group work, role-play, etc.). Just as this traditional learning must follow sound instructional strategies, so too must e-learning; however, e-learning has an additional consideration - how to use technology to effectively deliver the instruction.

Web-based courses are designed to take into account this "interplay between instructional design and the Web delivery system" (Conrad, p.13). This interplay, then, should be viewed with variance in mind by using instructional strategies that technology can support and that will ultimately support the learner in mastering skills.

This "hybrid of instructional design and Internet technology" (Conrad, p. 10) is what separates e-learning from learning-oriented Web sites (like how-to guides). The goal of e-learning is to deliver content that supports mastery of skills and competencies vs. delivery of content that is just informational (although there is e-learning that provides only information).

What Does E-Learning Look Like?

It depends on how the instruction is designed, developed, and delivered - the methodology. For instance, a learner could see text, graphics, video, assessments, and games on his computer screen. What makes it e-learning is the incorporation of instructional methods like questions, problems, activities, exercises, etc. Increasingly, the advances in technology and learners' expectations for rich learning environments have driven the need for sound, effective instructional design principles as a means to use the Web to its potential for e-learning (Kahn, 2001).

What does *effective* e-learning 'look' like? This can be very subjective and is often debated at length by practitioners. Sitting through a lecture can be considered 'training' as much as page turning text on a computer screen can be considered 'e-learning.' The common denominator here for all methods of electronic delivery and use of technology in learning is the 'instruction.' The 'e-' part of e-learning is simply the delivery mechanism for the instruction (Clark and Mayer, 2003).

Live E-Learning Interface

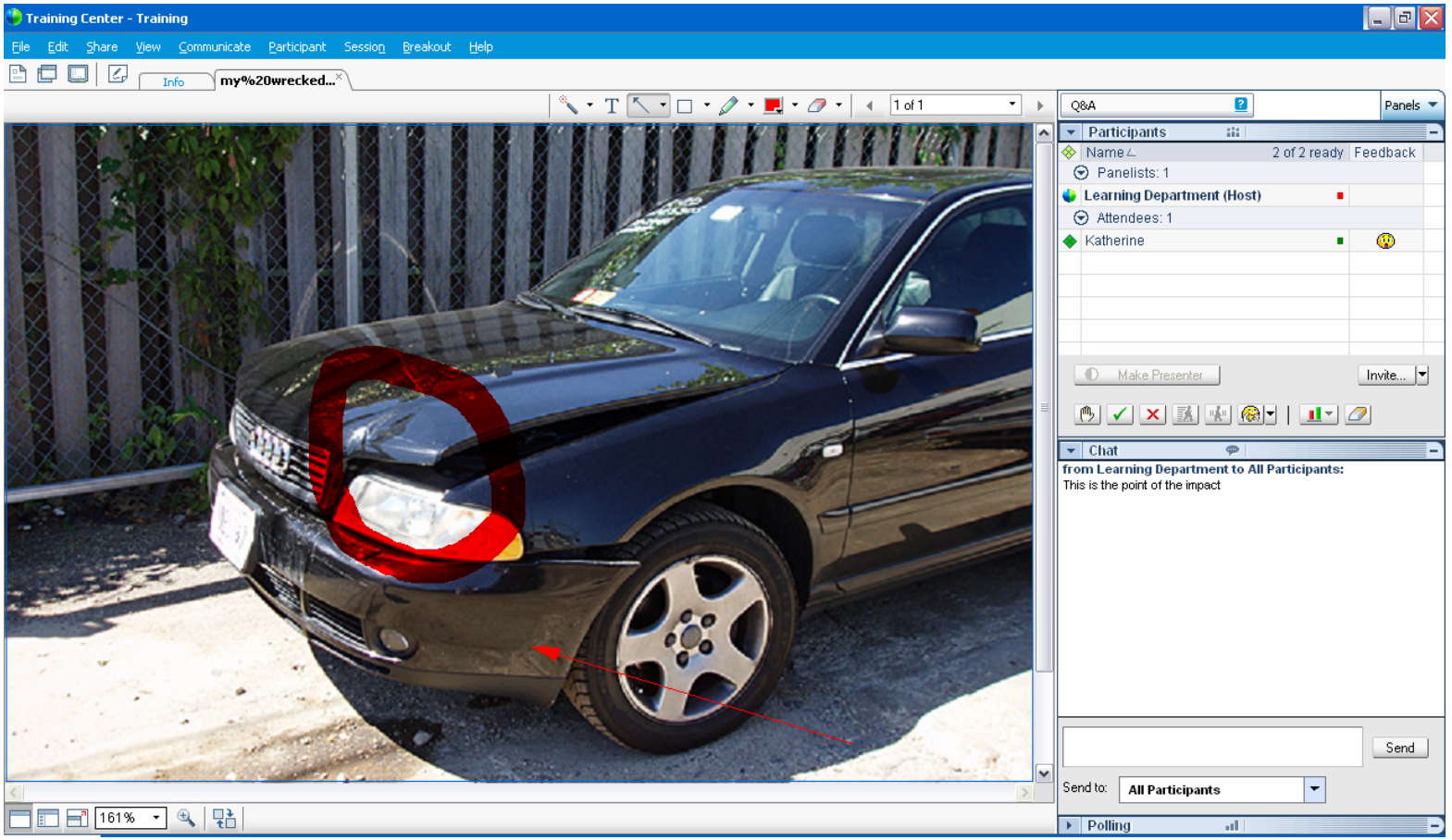
The two screen shots below illustrate a live online learning interface. In the first, a claims adjuster works with a subject matter expert to understand vehicle repairs. In the second, a group of learning practitioners meets to brainstorm new technologies using a virtual whiteboard. Training delivered live online can save organizations a significant amount of money in travel costs.

Some of the most widely recognized live synchronous e-learning platforms include:

- WebEx™ (recently purchased by Cisco)
- Centra™
- Live Meeting™ (Microsoft)
- Interwise™
- Macromedia Breeze Live™ (now Acrobat Connect Professional

WebEx Training Center Interface

Image, document, or application



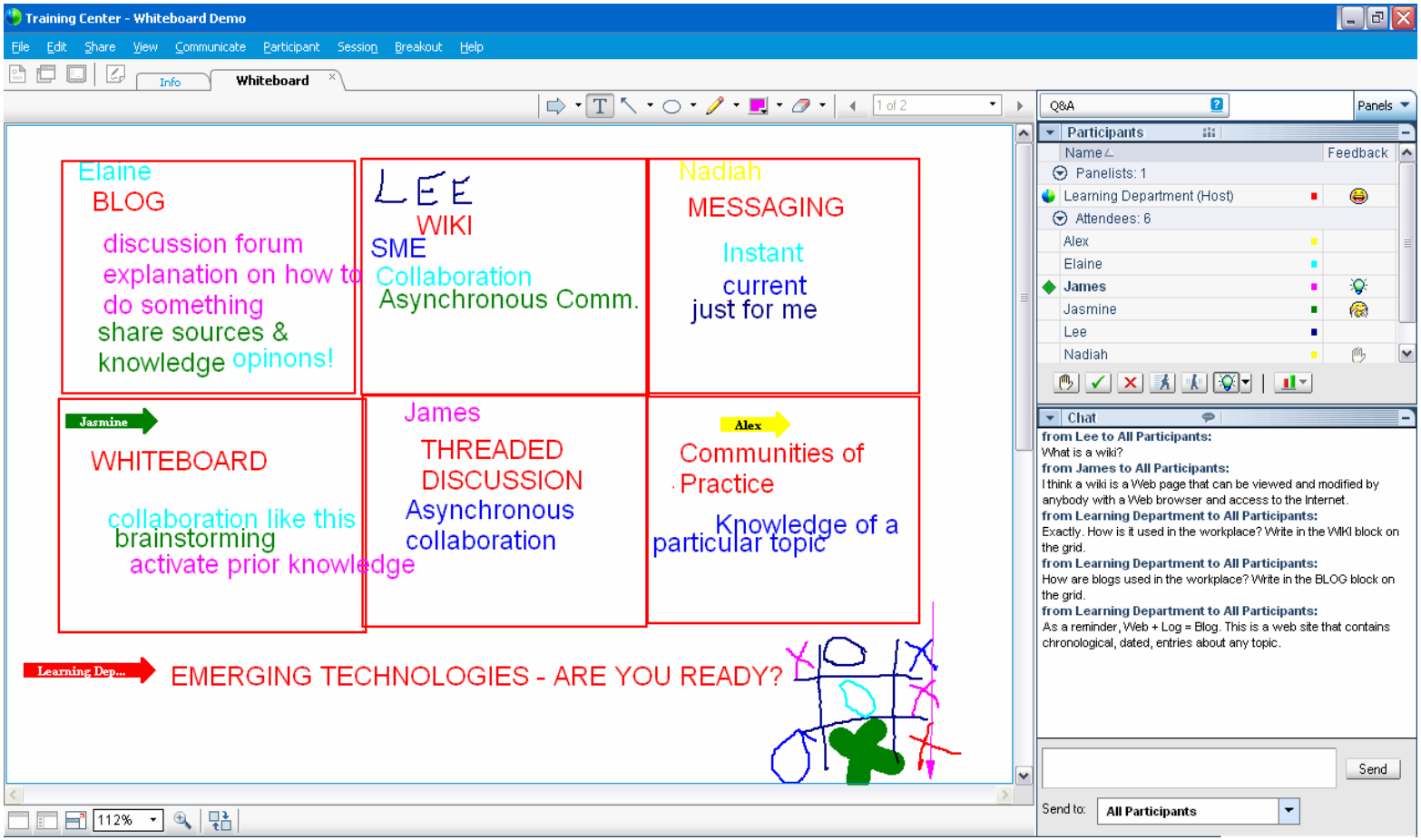
Students and Instructor

Chat

Here, the instructor shows an insurance company adjuster how to review damage on a vehicle.

For a more personal session, you can also show video of the instructor or students.

WebEx Training Center – Whiteboard Interface



Here, learners can collaborate and brainstorm by using a virtual whiteboard.

Instructional Design Methods

Designing effective instruction involves a process. One common instructional design system used is ADDIE, a linear model named for its method (analysis, design, development, implementation, and evaluation). This methodology is sometimes considered flawed due to its waterfall methodology. Alternative methods of designing instruction include the following: models using iterations and prototypes, rapid prototyping design (Clark, 2000), and successive approximation, an iterative approach that prescribes 'backing up' (Allen, 2003).

Overall, instructional design models are used for designing effective instruction. Nearly all instructional design models include four key components – learners, objectives, methods, and evaluation. Designing a Web-based delivery system incorporates this traditional process of analysis with an additional assessment of learners' Web-related needs. Incorporating technology needs with the traditional process of analysis assures learners will meet the goals of Web-based instruction.

Key criteria in two categories must be met to successfully deliver Web-based training (Conrad, 2000):

1. Training goals
2. Audience characteristics

Goal analysis involves defining instructional objectives. Needs and task analysis are critical to selecting an instructional delivery system. Audience characteristics provide the basis for the best delivery methods. Instructional analysis reveals gaps in the knowledge of individual learners (what they do vs. what they should do) and also can indicate a baseline level of knowledge (what they know). Using technology, e-learning can uniquely help address the needs of learners at this individualized level.

An overall systematic methodology is needed to guide learning practitioners and to provide the necessary tools to easily create, revise, and keep pace with changing technologies, software, and models of instructional design.

No one model is really superior to another – each has its advantages and disadvantages. The most cost-effective, efficient process is the goal of the instructional designer.

Simple Tips for Designing E-Learning

> Keep is simple – text, sound, motion, color, etc. should be used to support the instruction. If it doesn't support it – remove it. Resist the urge to show off your cool new skills.

- Provide a harmonious and consistent variety of text, sound, motion, color, etc. to keep attention and avoid learner distraction.
- If using simulations or problem-solving interactions, replicate the real work environment as much as possible.
- Graphics/pictures should support the instruction and reinforce a message, not just provide superfluous filler.
- Limit the amount of text on a page. See http://www.useit.com for some usability guidelines.

Pay No Attention to That Man Behind the Curtain!

In the movie "The Wizard of Oz," Toto reveals the “great and powerful Oz” working the controls of his wizard machine from behind a curtain. After getting busted by Toto, the common-man-would-be-wizard shouts into his microphone: "Pay no attention to that man behind the curtain!" The instructional design team in e-learning is like the Wizard; they work out of sight, entering the code, text, interactions, and graphics that make up the e-learning course.

The Instructional Design Team

Personnel involved in creating e-learning include instructional designers, graphic artists, programming or authoring specialists, project managers, subject matter experts, quality assurance personnel, a Webmaster or database specialist, and content/instructional writers. Depending on the size and budget of an organization, a team could include one person or an entire team of people. Often, this plays into an organization’s decision to use a custom content developer, to build their own content, or to purchase commercial, off-the-shelf content. Below is a sampling of some of the main players on an instructional design team.

Instructional Designer

The instructional designer works either alone or with a team to design training that is based on sound instructional design principles. The instructional designer determines objectives, activities, sequencing, and evaluation methods needed to meet the goal of the instruction – and for e-learning – all within the capabilities of the online environment. He or she should have knowledge of media techniques, Web design, and authoring skills.

Subject Matter Expert (SME)

The subject matter expert is an expert in the subject that is being taught – where the content will come from. The SME provides and validates content and helps other team members identify training needs.

Graphic Artist/Designer

The graphic artist collaborates with instructional designers to provide interface design and good Web usability. He or she creates page layouts, graphics, colors, and media to support the instructional objectives.

Writer/Editor

This person writes and edits e-learning for Web delivery. He or she must understand Web page layout, usability, and style guidelines.

Course Developer/Designer

This person works to develop e-learning using a variety of authoring tools. He or she makes the conceptual link between course and Web design.

Project Manager

The project manager oversees all aspects of an e-learning project. He or she serves as the primary contact point between all parties and is often responsible for developing timelines, identifying risks, and keeping projects within scope and budget. The project manager must lead a diverse team through all stages of a project, keeping track of resources, documentation, and deliverables. As you can imagine, the project manager must be organized, be flexible, and be a good communicator.

How Long Does it Take to Create E-Learning?

There are no set measurements on how long it takes to create e-learning. It depends on the content, resources available, level of interactivity, and capabilities of the developer. One source says creating a one-hour e-learning course averages about 250 hours of development time. Acceptable production times are approximately 8-12 weeks for one hour of training, 12-16 weeks for two hours of training, and 16-20 weeks for three hours of training (Codone, p.14). This is consistent with this author's experience on an interactive course utilizing a team of people.

Bryan Chapman, chief learning strategist and consultant/researcher through alliance with Brandon Hall Research, provides the following benchmarks:

Ratio	Type of learning
34:1	Instructor-led training (ILT), including design, lesson plans, handouts, PowerPoint slides, etc.
33:1	PowerPoint to e-learning conversion. Not sure why it takes less time then creating ILT, but that's what we discovered when surveying 200 companies about this

	practice.
220:1	Standard e-learning, which includes presentation, audio, some video, test questions, and 20 percent interactivity.
345:1	Time it takes for online learning publishers to design, create, test, and package third-party courseware.
750:1	Simulations from scratch. Creating highly interactive content.

Methods of Delivery

E-learning can be delivered "live" or at "any time." This means learners can learn in the following ways:

> Together – at the same time

> Together – at different times

> Independently (not together)

Asynchronous e-learning is a term meaning learners are not "there" at the same time. In other words, communication between learners does not happen simultaneously – it is time-delayed. In e-learning, this can include online learning delivered via instructor-led classrooms (that are not "live"), self-paced courses, discussion rooms, communities of practice, bulletin boards, or some other type of forum where users read what others have written and respond at a time of individual choice.

Synchronous learning means all learners are "there" at the same time. "There" can be in instructor-led training (ILT) in a physical classroom or, in the case of e-learning, on the Web (online). "Live online learning," "live online classroom," and "virtual classroom" are some of the terms associated with synchronous e-learning. The types of events that take place "live online" include meetings, presentations, Webinars (Web-based seminar), live chats, and learning events. Synchronous e-learning is often delivered live by an instructor or facilitator. What differentiates synchronous e-learning from asynchronous e-learning is the capacity for live interactivity.

This "anytime – anywhere" delivery is one of the benefits of e-learning. Where else can you attend a training session in your favorite sweatpants and fuzzy bunny slippers?

I could describe to you how to swim, but, until you've put your head under water, you really don't know what it's like. You've got to jump right in! Consider sitting in on an online course. Insync Training offers a free session called "Learn How to Learn Online."
http://www.insynctraining.com/pages/pg_community_learn_how_to_learn.htm

Blended Learning

Blended learning involves using a combination of synchronous and asynchronous blends of instructor-led classroom training and e-learning. While the concept has been used by teachers and trainers for years, the term "blended learning" is new and is most often associated with organizations seeking to deliver training more efficiently by incorporating technology. Blended learning possibilities are limitless and can also include hands-on training, on-the-job training, emulation, simulation, and mentoring.

Learning Management Systems (LMS) & Learning Content Management Systems (LCMS)

It's Sometimes Easier to go to a Supercenter Than to Ten Different Stores

Learning management systems can provide a one-stop place for e-learning, including launching content and developing content.

A learning management system is software that manages learning events and learners and serves as a platform to deliver e-learning. Various systems offer different levels of functionality, with some of the more robust systems offering tools such as talent and performance management and skill gap analysis. Many LMSs can manage classroom training events, manage and launch live online learning events, manage physical inventory of training materials, and create and launch e-learning. Software can be installed on an organization's servers or hosted by another company or the vendor.

Learning technology systems provide the infrastructure for e-learning delivery. Mastery of technology is not required to incorporate e-learning into an organization. Companies can purchase software and hosting services for their e-learning or can create and maintain their own infrastructure. Decisions to build or buy depend on capabilities, budget, and resources. Most often, the tracking and automation of learning events is done by using a learning management system (LMS).

A different type of system is a learning content management system (LCMS), which manages learning content. The system stores, finds, and retrieves data within a central repository, normally a database, making it possible to search for learning content. LCMSs allow users to deliver learning objects (self-contained chunks of learning), allowing greater flexibility and ease of updating content. Alternate terms include content management system or course management system (CMS).

Content launched through an LMS or LCMS is often required to meet industry standards. The industry standard for e-learning is called SCORM (Scalable Courseware Object Reference Model) – a collection of standards and specifications adapted from multiple sources to provide a comprehensive suite of e-learning capabilities that enable interoperability, accessibility, and reusability of content. See the Advanced Distributed Learning site listing in the resource section for information on e-learning standards.

Open source e-learning platforms have gained popularity and continue to grow. Moodle (http://www.moodle.org) is free software supported by a team of programmers and a user

community. Features can include forums, content management, learning management, quizzes, and other activities.

Brandon Hall's most recent research indicates some of the most widely recognized learning management systems include the following:

- SumTotal™
- Saba™
- Plateau™
- Oracle/PeopleSoft™
- GeoLearning™
- Learn.com™

E-Learning Evaluation

The same evaluation strategies (Kirkpatrick's Levels 1-4) and processes used in other types of evaluations can be applied to e-learning programs. Return on investment studies show positive return for companies implementing e-learning programs based on cost reduction alone vs. traditional classroom instruction. While recipients of face-to-face instruction have expressed more satisfaction (at Level 1) with traditional learning solutions, the learning outcomes are not different (at Level 2) for participants of e-learning programs (Phillips, 2000).

In addition to measuring the effectiveness of an e-learning course, learning professionals must determine if e-learning itself is a viable option for their organization. Management support, number of learners, abilities of learners, administration, and creation of content should all be considered (Hall, n.d.). Common pitfalls of e-learning initiatives include complete replacement of all training with e-learning, leadership rejection, lack of executive sponsorship, and boring, ineffective courses.

Here are some further criteria for evaluating the quality of e-learning from the judging awards used to evaluate entries in the Brandon Hall Learning Awards Program:

1. Content – Does the program include the right amount and quality of information?
2. Instructional Design – Is the course designed in such a way that users will actually learn?
3. Interactivity – Is the user engaged through the opportunity for input?
4. Navigation – Can users determine their own way through the program? Is there an exit option? Is there a course map? Is there an appropriate use of icons and/or clear labels so that the user doesn't have to read excessive documentation to determine program options?
5. Motivational Components – Does the program engage the user through novelty, humor, game elements, testing, adventure, unique content, surprise elements, etc.?
6. Use of Media – Does the program appropriately and effectively use graphics, animation, music, sound, video, etc.?
7. Evaluation – Is there some type of evaluation, such as: completion of a simulation? Mastery of each section's content before proceeding to later sections? Section quizzes? Final exam?
8. Aesthetics – Is the program attractive and appealing to the eye and ear? Does the structure of the screen add to the program?

9. Record Keeping – Are student performance data recorded, such as time to complete, question analyses, and final scores? Is the data forwarded to the course manager automatically?
10. Tone – Is the program designed for the audience? Does it avoid being condescending, trite, pedantic, etc.?

E-Learning Authoring Tools

How Do You Create E-Learning?

The design, development, and delivery of e-learning involve people, hardware, and software. One person or an entire instructional design team can be involved. Hardware normally involves a personal computer workstation capable of handling multimedia applications and a Web browser. Access to a network may be needed as well as the ability to host content on servers. Software includes authoring applications and various Web editing and graphics tools. There are simple and complex tools used to create e-learning. E-learning is created using software tools for presentation-type e-learning, tests and assessments, interactive authoring tools and authoring tools within an LMS or LCMS, gaming software, software simulation tools, general Web development tools, non-software simulation tools, and prototyping software.

Simple authoring tools are software programs that let you create content without needing to write programming code. More complex tools use programming languages to allow developers to create more complex e-learning. What you gain in simplicity you often lose in flexibility. Your decision on which authoring tools to use should be based on your needs as an organization – resources, budget, usage, ability of developers, etc.

Brandon Hall's most recent research indicates that some of the most widely recognized authoring tools include the following:

> Macromedia Flash™

> Macromedia Dreamweaver™

> Macromedia Authorware™

> TrainerSoft from Outstart™

> Lectora Publisher™

> Macromedia Captivate™

The most recognized software simulation tools include the following:

> Macromedia Captivate™

> OnDemand™ (Global Knowledge)

> FireFly™ (KnowledgePlant)

> Assima™

> STT Trainer™ (STT: A Division of Kaplan)

> InfoPak Simulator™ (RWD Technologies)

Emergent Technology and Trends

Several notable new technologies are being used to deliver training. Podcasting/Vodcasting (or Learncasting) is derived from "Pod" (Apple's iPod™) + "cast" (broadcast). It is used to create and distribute audio/video content in a format for delivery over the Internet for portable playback on an iPod™ (or similar device) or PC. It is referred to as a "pull" technology because users subscribe to "Podcasts." (A Learncast, then, is a Podcast for delivering e-learning – the differentiating factor is that a Learncast is instructional in nature.) Some have even referred to podcasts as "edutainment." Similar forms of delivery (Webcast, netcast) have been around for several years (before the iPod's release in 2001). Audio content allows companies a different medium to reach people inundated with text. Rich context can be delivered to learners, allowing them to listen anytime, anyplace. Tone of voice and emotion come through easily, and development is rapid. It can be used for many types of training, including tips, event capture, orientation, and new product training. It can provide just-in-time and just-enough information inexpensively to a large, geographically diverse group.

Another emergent technology for learning is a wiki. A wiki is a Web page that can be viewed and modified by anybody with a Web browser and access to the Internet. Wikis permit asynchronous communication and collaboration across the Internet. Wikis can be used for collaboration in the workplace – by subject matter experts (SMEs) to create on-the-fly content, as a repository for information, for meeting details, for group activities, to track workflow, etc. Its strengths for teaching and learning include collaboration, ownership (of content), speed, and simplicity. Its weaknesses include control of content.

The word blog originates from the words Web + log. Blogs are being used by some companies as a new tool for learning online. A blog is a Web site that contains chronological, dated entries about any topic. Templates make it easy for anyone to create a blog. Some blogs allow feedback and comments, and they often contain links to other sites. They can be written by one person or by a group. Blogs are really an online vehicle for personal journals, diaries, editorials, and information. From mundane to cutting edge, blogs reflect the opinion and voice of the writer. Blogs can provide discussion forums for new products, provide explanations for how to do or use something, manage knowledge (archive), and allow a place for collaboration and sharing of sources. They can be linked more often than not and contain current information because they are frequently updated. Blogs can also be syndicated using RSS. This means readers can subscribe to a blog, in effect creating their own daily newspaper. You can create your own blog easily – try http://www.blogger.com/start.

Along with 'casting,' blogs, and wikis, discussion groups and forums are being utilized as another form of collaboration. Communities of Practice are also a growing tool for social learning driven by collaboration. The strong suit of a community is its ability to capture and

keep the tacit knowledge of a group and foster connections among learners. Some other new applications, such as sharing services, have potential for learning. (See http://del.icio.us.)

E-learning continues to evolve with new delivery methods – to PDA or mobile phone (called M-Learning) and via blogs, wikis, Podcasts, and easier-to-use tools. There is also a trend seen in the transition from training to learning that leverages the power of the Internet to go beyond e-learning through knowledge management, competency management, and performance support and to HR processes like performance management, talent management, succession planning, and hiring.

Web 2.0 (and e-learning 2.0) technologies are driven by collaboration. It's the next phase of e-learning.

E-Learning Glossary

ADDIE Model

Classic model of an instructional system design process that includes the steps Analysis, Design, Development, Implementation, and Evaluation, from which the acronym is taken. *(Source: e-learningguru.com)*

Advanced Distributed Learning (ADL)

A collaborative effort between the U.S. government, industry, and academia to establish a new distributed learning environment that permits the interoperability of learning tools and course content on a global scale. *(Source: http://www.adlnet.org)*

Alpha Test

A type of formative evaluation during which subject matter experts, developers, instructors, and skilled target audience members walk through a course to determine its effectiveness based on the target audience and established training goal. *(Source: Conrad, 2000)*

Application

Performance requiring the learner to apply the information. *(Source: Morrison, et al, 2004)* Also, any stand-alone computer program.

Application Service Provider (ASP)

A third-party organization that supplies software applications and/or software-related services over the Internet. ASPs allow companies to save money, time, and resources by outsourcing some or all of their information technology needs. *(Source: ASTD)*

Assessment

A systematic collection of data pertaining to programs or people. *(Source: Morrison, et al, 2004)*

ASP:

See “Application Service Provider”

Asynchronous

Asynchronous e-learning is when communication between people does not occur simultaneously. Some examples of asynchronous e-learning include taking a self-paced course, exchanging e-mail messages with a mentor, and posting messages to a discussion group. The advantages of asynchronous learning are convenience, accessibility, and the fact that it is self-paced. The disadvantages of asynchronous learning are that the student may feel isolated or be less motivated without any real-time human interaction. In addition, asynchronous e-learning

does not provide immediate feedback on a student's performance, leaving adjustments to training until after an evaluation is completed. *(Source: Brandon Hall, 2006)*

Authoring Tool

A software application that allows individuals to create their own e-learning content, without needing to have programming skills. Such tools often use a template approach or a metaphor (book, form, timeline, flowchart, etc.) to support the content creation process. Well-known general purpose authoring tools include Authorware, ToolBook, and Quest. Many other more specialized authoring tools also exist, including tools built into learning management systems or learning content management systems. *(Source: Brandon Hall, 2006)*

Aviation Industry CBT Committee (AICC)

An aviation industry consortium that creates guidelines for developing, delivering, and evaluating technology-based learning. *(Source: http://www.aicc.org)*

Bandwidth

The amount of data, usually measured in bits or bytes, transmitted through a communications line in a specified amount of time and usually measured in seconds. If the communication line were a tunnel and the data was water, then bandwidth would measure the amount of water capable of flowing through the tunnel in a given period of time. *(Source: Conrad, 2000)*

Beta Test

A review of the usability and navigation issues of a Web-based training course. Beta usability testing follows both criteria and alpha testing and is the last stage of testing that a Web-based training course undergoes before delivery to the learning audience. Beta usability testing involves delivering a course to at least five members of the target audience while including course designers, developers, and content experts as observers. *(Source: Conrad, 2000)*

Blended Learning

Learning events or programs that combine two or more delivery strategies to provide a more integrated and effective learning experience. A common blended learning approach in the business skills area is to provide instruction on basic concepts and principles via self-paced online learning modules, followed by classroom training to provide opportunities for practicing skills in a simulated, group context.*(Source: Brandon Hall, 2003)*

Blog

"Web" + "Log" = "Blog." This is a Web site that contains chronological, dated entries about any topic. Templates make it easy for anyone to create a blog. Some blogs allow feedback and comments, and they often contain links to other sites. They can be written by one person or by a

group. Blogs are really an online vehicle for personal journals, diaries, editorials, and information. From mundane to cutting edge, blogs reflect the opinion and voice of the writer.

Brainstorming

An idea-generating session in which participants are encouraged to freely associate on a given concept or problem and in which judgment of individual ideas is withheld. *(Source: Conrad, 2000)*

Browser

A software application that interprets and displays files formatted in HTML. Common browsers include Netscape Navigator™ and Microsoft Internet Explorer™. *(Source: Conrad, 2000)*

CAI:

See "Computer-Assisted Instruction"

CBI:

See: "Computer-Based Instruction"

CBT:

See "Computer-Based Training"

CD-ROM

A compact disk containing a quantity of verbal and pictorial information. *(Source: Morrison, et al, 2004)*

Chat

A form of synchronous communication between users on the Internet. Instead of talking, people use their keyboards to type out a conversation, which is transmitted over the Internet. *(Source: Conrad, 2000)*

CoPs:

See "Communities of Practice"

Collaboration Tools

This term is often used to refer to the asynchronous and synchronous tools integrated with learning management systems to support collaborative learning. Asynchronous tools include threaded discussion groups and e-mail while synchronous tools include virtual classroom platforms, "whiteboarding," online chat, and application sharing. *(Source: Brandon Hall, 2003)*

Communities of Practice (CoPs)

A group of professionals informally bound to one another through exposure to a common class of problems and common pursuit of solutions, thereby themselves embodying a store of knowledge. *(Source: http://www.co-i-l.com)*

Competency

Ability to perform a specified task, as for a job. *(Source: Conrad, 2000)*

Competency Management

Competency management is used to identify skills, knowledge, and performance within an organization. Such a system helps an organization spot gaps and introduce appropriate training, compensation, and recruiting programs based on current or future needs. *(Source: Brandon Hall, 2006)*

Computer-Assisted Instruction (CAI):

See "Computer-Based Training"

Computer-Based Instruction (CBI):

See "Computer-Based Training"

Computer-Based Training (CBT)

Instruction delivered to end users via floppy disks, the Internet, laser discs, mainframe, or CD-ROM. *(Source: Conrad, 2000)*

Content

Instruction required to teach an objective. *(Source: Brandon Hall, 2006)*

Content Management System (CMS)

Content Management Systems (CMS) are used to store and subsequently find and retrieve large amounts of data. Content management systems work by indexing text, audio clips, images, etc. within a database. In addition, CMSs often provide version control and check-in/check out capabilities. Using robust built-in search capabilities, users can quickly find a piece of content from within a database by typing in keywords, the date the element was created, the name of the author, or other search criteria. Content management systems are often used to create information portals for organizations and can serve as the foundation for the practice of knowledge management. They can also be used to organize documents and media assets. For example, a newspaper agency may use a content management system to provide an archive of every story ever written for the paper. Likewise, they might use the CMS to provide an extensive library of photographs that can be reused for future stories. *(Source: Brandon Hall, 2006)*

Courseware

The software implementation of computer-based training that delivers an organized experience of instruction and activities. *(Source: Conrad, 2000)*

Cross-Platform

The ability to run on both Macintosh and PC computers.

Culture

Norms of behavior and shared values among a group.

Curriculum

List of courses and content framework for a subject. *(Source: Morrison, et al, 2004)*

Custom Developed Content

Content developed by a vendor/consultant for a particular company's needs.

Delivery System

The method used to present training to a learning population; examples include WBT, classroom, and satellite television. A single delivery system typically integrates various technologies and media and can be used with other delivery systems. Thus, a Web delivery system uses Web technology and media such as graphics, video, chat, e-mail, etc. to provide Web-based training. *(Source: Conrad, 2000)*

Discussion Board or Forum

Not to be confused with a chat application where people exchange typed messages in real time, discussion forums allow people to communicate about various topics by posting messages and replies to messages under the heading of a particular topic. A collection of messages and replies about a topic is often referred to as a thread. *(Source: Brandon Hall, 2006)*

Distance Education

Instruction in which the instructor and student are separated in both physical location and time, requiring the instruction to be fully designed and developed before implementing the instruction. *(Source: Morrison, et al, 2004)*

Distance Learning:

See "Distance Education"

Drag and Drop

An activity performed by placing a mouse's cursor on top of an object on the computer screen, holding down the mouse button, and moving the cursor (and object) to another location on the screen. *(Source: Conrad, 2000)*

DVD (Digital Versatile Disc)

Optical disks that are the same size as CDs but are double-sided and have larger storage capacities. *(Source: ASTD, 2006)*

E-Learning "Space"

An imaginary geography in which the learning enterprise flourishes. Mapped by market analysts and mined by consultants, this territory is a recent annexation to the business landscape. *(Source: ASTD, 2006)*

Electronic Performance Support Systems (EPSS)

1) A computer application that's linked directly to another application to train or guide workers through completing a task in the target application. 2) More generally, a computer or other device that gives workers information or resources to help them accomplish a task or achieve performance requirements. *(Source: ASTD, 2006)*

Emulation

Seeing a recreation of an application screen. *(Source: Masie, 2005)*

End User

The final consumer of computer-related products. *(Source: Conrad, 2000)*

EPSS:

See "Electronic Performance Support Systems"

Evaluation

Any systematic method for gathering information about the impact and effectiveness of a learning offering. Results of the measurements can be used to improve the offering, determine whether the learning objectives have been achieved, and assess the value of the offering to the organization. (Source: ASTD, 2006)

Explicit Knowledge

Knowledge that has been or can be articulated, codified, and stored in certain media (manuals, documents, procedures, stories). *(Source: Wikipedia.org)*

Facilitate

Make easier; support.

Feedback

Information concerning the correctness of one's performance on a learning task or question. *(Source: Clark & Mayer, 2003)*

Granular

Small bits.

Graphic Artist

A person who designs images to accompany text, often with the aid of a software program. A member of a Web-based training team responsible for developing the user interface and illustrating key training concepts. *(Source: Conrad, 2000)*

Hosting

A process that enables a Web site to be accessed over the Internet or a network. Requirements for hosting a Web site include a server, Web-server software, and a dedicated connection to the Internet. Facilities for Web site hosting can be developed internally or can be outsourced to an Internet service provider. *(Source: Conrad, 2000)*

HTML:

See "Hypertext Markup Language"

Hypertext Markup Language (HTML)

A markup language used to specify placement of text and graphics on a Web page.

ID:

See "Instructional Design"

ILT:

See "Instructor-Led Training"

Infrastructure

The basic components of any system or organization. For example, in information technologies, infrastructure refers to the hardware required to transmit information between clients and servers. *(Source: Conrad, 2000)*

Instructional Design (ID)

A systematic process (including analysis and design) based upon learning and instructional theory for designing instructions. *(Source: Conrad, 2000)*

Instructional Designer

A person trained in the principles of instructional design who can apply those principles to a variety of learning situation and materials. *(Source: Conrad, 2000)*

Instructional Systematic Design (ISD)

The Instructional Systematic Design Model, developed in the 1960s, provides a methodical process for designing and developing instruction. *(Source: Brandon Hall, 2006)*

Instructor-Led training (ILT)

Provides instruction in a classroom or virtual classroom under the direction of an instructor or facilitator. *(Source: Brandon Hall, 2006)*

Interactivity

The sensory dialogue between a user and a computer program. Interactivity occurs when a user inputs data or submits commands (clicking a mouse button or typing on a keyboard), which in turn elicits output (displaying pop-up windows, changes in images, text, sounds, or printouts) from the computer program. *(Source: Conrad, 2000)*

Internet

The worldwide computer network used to transmit such electronic data as e-mail and Web pages. Computers on the Internet are linked to each other via telecommunication lines, modems, and TCP/IP protocol, allowing each computer to transmit data to any other point on the network. *(Source: Conrad, 2000)*

Internet Service Provider (ISP)

A company that provides access to the Internet for a fee. Most ISPs provide a means for users to gain dial-up access to the Internet and provide Web-site hosting services. *(Source: Conrad, 2000)*

Interoperability

The ability of hardware or software components to work together effectively. Interoperability among e-learning content and software products is the goal of SCORM, IMS, and AICSS standards efforts. *(Source: Brandon Hall, 2003)*

Intranet

A company's in-house network (or LAN) used to access HTML or other Web-formatted files. Intranets, as opposed the Internet, allow access only to a controlled group of users and are not available to the world at large. *(Source: Conrad, 2000)*

ISD:

See “Instructional Systematic Design”

ISP:

See “Internet Service Provider”

Kirkpatrick’s Scale

A four-level method devised by Donald Kirkpatrick for evaluating training effectiveness that incorporates (1) reaction (learners’ reactions to a course), (2) learning (attitudes changed or skills and knowledge learned), (3) transfer of training’s impact on changes in job behavior, and (4) business results (impact on organizational goals). *(Source: Conrad, 2000)*

Knowledge Management

Refers to a wide range of practices aimed at capturing, organizing, and storing the knowledge and experiences of individuals and groups within an organization and making it available to others in the organization. *(Source: Brandon Hall, 2003)*

Knowledge Management System (KMS)

A knowledge management system is an application that collects, stores, and makes information available among individuals in an organization. This system's primary purpose is to capture a company's collective knowledge and then make it simple to retrieve and reuse. A knowledge management system can help companies avoid reinventing the wheel. It can also enhance the exchange and dissemination of understanding within an enterprise and can increase the level of collaboration between employees. *(Source: Brandon Hall, 2006)*

Learner-Control

Allowing the learner to control the presentation of the lesson, such as the pacing, topics, and instructional elements, for practice or as an example. *(Source: Clark & Mayer, 2003)*

Learning Content Management System (LCMS)

A learning content management system (LCMS) is an environment where developers can create, store, reuse, manage, and deliver learning content from a central object repository, usually a database. LCMSs generally work with content that is based on a learning object model. These systems usually have good search capabilities, allowing developers to quickly find the text or media needed to build training content. LCMSs often strive to achieve a separation of content - which is often tagged in XM - from presentation. This allows many LCMSs to publish to a wide range of formats, platforms, or devices such as print, Web, and even wireless information devices (WID) such as Palm and Windows CE handhelds, all from the same source material. *(Source: Brandon Hall, 2003)*

Learning Management System (LMS)

A learning management system (LMS) is software that automates the administration of training events. All learning management systems manage the log-in of registered users, manage course catalogs, track learner activities and results, and provide reports to management. An LMS may or may not include additional functions, such as the following: authoring content; managing classroom training, instructors, and resources; managing competencies; managing certification or compliance training, and managing learner collaboration tools (mentoring, chat, discussion groups, etc.). *(Source: Brandon Hall, 2003)*

Learning Styles

Various methods of learning that are preferred by individuals or that may be more effective with different individuals. *(Source: Morrison, et al, 2004)*

Linear

A sequential progression of objects or events. Linear Web-based training requires students to access content and activities in a predefined sequence. *(Source: Conrad, 2000)*

Mentoring

A career development process in which less experienced workers are matched with more experienced colleagues for guidance. Mentoring can occur either through formal programs or informally as required and may be delivered in-person or by using various media. *(Source: ASTD, 2006)*

M-Learning

Learning that takes place via such wireless devices as cell phones, personal digital assistants (PDAs), or laptop computers. *(Source: ASTD, 2006)*

Module

A singular component within a training course. Like chapters in a book, a training course is usually comprised of several modules, each covering a single topic, task, or set of objectives. Learning is reinforced and measured at the end of a module, according to the module objectives and related practice activities or tests. *(Source: Conrad, 2000)*

Multimedia

A combination of presentation media, such as text, audio, graphics, and/or streaming video, which appeals to a variety of senses and learning styles. *(Source: Conrad, 2000)*

Navigation

The movement of a user between the components of a Web site or software application; the means or tools used to facilitate such movement. *(Source: Conrad, 2000)*

Needs Analysis

The drawing of conclusions and solutions for possible training needs; a systematic process that precedes instructional design. Needs analysis involves gathering and synthesizing data from and about a target audience for whom training might be a potential solution, as well as from work environment conditions, tools, policies, processes, and procedures that impact job performance. *(Source: Conrad, 2000)*

Objective

(Terminal) A statement that describes in measurable terms what a student will know or be able to do upon successfully completing a course. Terminal objectives usually consist of three components: (1) skill or knowledge to be demonstrated, (2) conditions under which the demonstration will occur, and (3) a testing criterion specifying a level of proficiency for the demonstration.

Objective

(Enabling) A statement that describes in measurable terms what a student must know or be able to do to achieve an associated terminal objective; like terminal objectives, enabling objectives usually consist of three components (listed above). *(Source: Conrad, 2000)*

COTS (Commercial Off-the-Shelf) Courseware

Courseware purchased from a third-party vendor; non-customized content.

Out-of-the-Box

Refers to an application's suitability to be rapidly integrated into an existing system, i.e., minimal customization.

Outsource

Hiring of a company or person outside of the vendor organization to perform a training design, development, delivery, or maintenance task or service. For example, many Web-based training vendors outsource the hosting of their courses to Internet service providers. *(Source: Conrad, 2000)*

Page Turner

A Web-based course that does not incorporate multimedia or enhanced interactivity in its design. Users interact with page turners on a very basic level: reading text, scrolling up and down, or clicking forward or backward buttons. *(Source: Conrad, 2000)*

Plug-In

A small software application, or module, which can be installed on a client computer to increase the functionality of a Web browser. Plug-ins are typically used to allow interaction with specialized types of computer files, as with Macromedia Shockwave™. *(Source: Conrad, 2000)*

Podcast

"Pod" (Apple's iPod) + "cast" (broadcast) = creating and distributing audio/video content in a format for delivery over the Internet for portable playback on an iPod (or similar device) or PC. It is referred to as a "pull" technology because users subscribe to "Podcasts." (A Learncast, then, is a Podcast for delivering e-learning – the differentiating factor is that a Learncast is instructional in nature.) Similar forms of delivery (Webcast, netcast) have been around for several years (before iPod's release in 2001). An iPod is just a brand of portable media player manufactured by Apple and owned by over 40 million people, hence the popularity of the term "Podcast."

Project Manager

The primary customer contact who is responsible for a project within his or her company. *(Source: Conrad, 2000)*

Proof-of-Concept

Proof (by example) that a system is viable and capable of performing as intended.

Prototype

A modifiable, small-scale model of a product that has not yet been released into the marketplace. The findings from prototype testing and review are figured into the final product design. *(Source: Conrad, 2000)*

Pull Technology

In reference to the Internet or other online services, the technology whereby people use software such as a Web browser to locate and "pull down" information for themselves. *(Source: ASTD, 2006)*

Push Technology

In reference to the Internet or other online services, the technology whereby information is sent directly to a user's computer. *(Source: ASTD, 2006)*

Rapid E-Learning

E-learning that can be developed rapidly, usually by omitting steps in the design process.

Repurpose

To reuse content by revising or restructuring it. *(Source: ASTD, 2006)*

Request for Proposal (RFP)

A document issued by a client to a vendor requesting a description of specified services, schedule, and pricing information required to complete a proposed project. The RFP typically includes a description of project scope and specifications. *(Source: Conrad, 2000)*

Return on Investment (ROI)

A means of computing the financial gain of an investment; the savings earned by a training solution less the cost of that solution. *(Source: Conrad, 2000)*

Reusable Learning Object (RLO)

Reusable learning objects (LO), also called learning objects or sharable content objects (SCO), are not really a set technology but, rather, a philosophy for how content can be created and deployed. Learning objects refer to self-contained chunks of training content that can be assembled with other learning objects to create courses and curricula, in much the same way a child's Lego blocks are assembled to create all types of structures. Learning objects are designed to be used in multiple training contexts, aim to increase the flexibility of training, and make updating courses much easier to manage. Update a part of a learning object, and the change should appear in any course using that learning object. The size of a learning object differs based on the instructional designer, from as small as a single page of content to as large as is required to contain an objective, presentation material, a practice section, and an assessment. The current SCORM specifications provide a more precise, yet flexible, definition of what a learning object should be. *(Source: Brandon Hall, 2003)*

RFP:

See “Request for Proposal”

RLO:

See “Reusable Learning Object”

ROI:

See “Return on Investment”

Role-Play

A training technique in which learners act out characters to try out behaviors, practice interactions, communicate for a desired outcome, and/or solve a dynamic problem. Role plays can reinforce learning and help people apply new information, skills, and techniques. (Source: ASTD, 2006)

Scalable

The degree to which a computer application or component can be expanded in size, volume, or number of users served and continue to function properly. *(Source: ASTD, 2006)*

SCORM

The Sharable Courseware Object Reference Model (SCORM) is a set of specifications that, when applied to course content, produces small, reusable learning objects. A result of the Department of Defense's Advanced Distributed Learning (ADL) initiative, SCORM-compliant courseware elements can be easily merged with other compliant elements to produce a highly modular repository of training materials. The SCORM specifications integrate specifications from both AICC and IMS. *(Source: Brandon Hall, 2003)*

Self-Assessment

The process by which the learner determines his or her personal level of knowledge and skills. (Source: ASTD, 2006)

Server

A computer with a special service that functions on a network, generally to receive and connect incoming information traffic. (Source: ASTD, 2006)

Sharable Content Objects (SCO):

See “Reusable Learning Object”

Simulation

Highly interactive application that allows the learner to model or role-play in a scenario. Simulations enable the learner to practice skills or behaviors in a risk-free environment. (Source: ASTD, 2003)

SME:

See “Subject Matter Expert”

Statement of Work (SOW)

A document primarily for use in procurement, which specifies the work requirements for a project or program. It is used in conjunction with specifications and standards as a basis for a contract. (Source: http://sparc.airtime.co.uk)

Storyboard

A screen-by-screen diagram that illustrates the text, graphics, and interactivity that will appear in a WBT course. This is the blueprint from which Web programmers and graphic artists work. *(Source: Conrad, 2000)*

Streaming Video

A video file displayed over a computer network using streaming technology. A video file that can begin display before all components of the file have completed downloading. To view streaming video on the Web, you will usually need a plug-in such as Real Player™ from Real Networks. *(Source: Conrad, 2000)*

Subject Matter Expert (SME)

A person with extensive expertise in a given subject who evaluates the accuracy of course content according to his or her expertise. The SMEs also work in conjunction with project managers, instructional designers, and course developers to identify audience and training needs. *(Source: Conrad, 2000)*

Synchronous

At the same time. In training, it is instruction delivered via a network that requires learners and an instructor to be online at the same time to participate in learning interactions. *(Source: Conrad, 2000)*

Tacit knowledge

Knowledge not easily shared. “Know how” vs. “know what” (fact) and “know why” (science). *(Source: Wikipedia.org)*

Task Analysis

A systematic process of uncovering how a task is performed effectively; a task analysis involves a flow-charted description of each task, along with the steps, knowledge, decisions, tools, and human interactions required to perform each task. *(Source: Conrad, 2000)*

Taxonomy

A science or system of classifying related topics or ideas. For example, Bloom's taxonomy classifies verbs and strategies for constructing training objectives. *(Source: Conrad, 2000)*

Third-Party

Someone other than the principals directly involved in a transaction or agreement (contracting with a third-party for off-the-shelf courseware, LMS, etc.).

URL

Uniform resource locator, a/k/a pathname: a text string used to indicate the location of a file within a directory structure or network. Can be characterized as either absolute or relative. *(Source: Conrad, 2000)*

Usability (Testing)

A procedure that involves careful observation and recording of how the target end users interact with a Web site. Usability tests reveal the degree to which an identified audience finds a Web site "usable" given its needs and goals. *(Source: Conrad, 2000)*

Vendor

A company that sells its services and products to another company. *(Source: Conrad, 2000)*

Videoconference

Using video and audio signals to link participants at different and remote locations. (Source: ASTD, 2006)

Virtual Classroom

A conceptual arena on the Internet where users can interact with each other to learn. *(Source: Conrad, 2000)*

Voice Over IP (VoIP)

Voice transmitted digitally using the Internet Protocol. Avoids fees charged by telephone companies. *(Source: ASTD, 2006)*

VoIP:

See "Voice Over IP"

WBT:

See "Web-Based Training"

Web Conference

A meeting of participants from disparate geographic locations that is held in a virtual environment on the World Wide Web, with communication taking place via text, audio, video, or a combination of those methods. (verb) To participate in a Web conference. (Source: ASTD, 2006)

Web-Based Training (WBT)

The integration of the instructional practices and Internet capabilities to direct a learner toward a specified level of proficiency in a specified competency. *(Source: Conrad, 2000)*

Webcast

"Web" + "broadcast" = "Webcast." (noun) A broadcast of video signals that is digitized and streamed on the World Wide Web and that may also be made available for download. (verb) To digitize and stream a broadcast on the World Wide Web. *(Source: ASTD, 2006)*

Webinar

"Web" + "seminar" = "Webinar." A small synchronous online learning event in which a presenter and audience members communicate via text chat or audio about concepts often illustrated via online slides and/or an electronic whiteboard. Webinars are often archived as well, for asynchronous, on-demand access. *(Source: ASTD, 2006)*

Whiteboard

An electronic version of a dry-erase board that enables learners in a virtual classroom to view what an instructor, presenter, or fellow learner writes or draws. Also called a smartboard or electronic whiteboard. *(Source: ASTD, 2006)*

Wiki

A Web page that can be viewed and modified by anybody with a Web browser and access to the Internet. Wikis permit asynchronous communication and collaboration across the Internet. Why "wiki"? "Wiki wiki" means quick in Hawaiian.

World Wide Web

A portion of the Internet that encompasses Web sites and Web pages (excluding e-mail, newsgroups, chats, etc.). Creation of the World Wide Web is generally attributed to Tim Berners-Lee. *(Source: Conrad, 2000)*

WYSIWYG

What you see is what you get. Pronounced "wizzy wig," a WYSIWYG program allows designers to see text and graphics on-screen exactly as they will appear when printed out or published online, rather than in programming code. *(Source: ASTD, 2006)*

FAQs

What is e-learning?

Often called online learning, e-learning is instruction you access electronically. Most of the time, you access it on a computer using the Internet. The instruction could be a class, a course, or a discussion and could look like a book, a movie, a Web page, a game, or a combination of those things. The goal of e-learning is to provide a way to support learning. You can buy e-learning or create it yourself. Some of the benefits of e-learning include speed, cost, consistency, and availability. The "e" can be considered the "how" (electronic) and the "learning" can be considered the "what" (content).

What types of organizations use e-learning?

All types of organizations use e-learning – private sector/for-profit, non-profit, government, consumer, and educational institutions. Organizations use e-learning for many reasons – to save money, reach geographically dispersed groups, provide “anywhere-anytime” learning, provide consistency, ensure compliance with regulations, and improve productivity, to name just a few.

How do I know whether e-learning is right for our organization?

There are several questions you can use to assess the viability of e-learning for your organization:

> Do you have management support?

> Do you have enough potential users to justify the cost of purchase or development?

> Do you have a target audience who can use or learn to use a computer?

> Will they accept a Web-based program?

> Will they learn from this particular program?

> Will the program provide a method of instruction that is easier, faster, cheaper, safer, or more engaging than the alternative?

> Do you have a plan to manage and administer e-learning (LMS)?

What is e-learning used for?

Introductory/orientation training, remedial training, certification training, academically (for credit), to promote products and services, support organizational initiatives, to offer training to

geographically disparate personnel, to offer a variety of learning opportunities, coaching and mentoring, communities of practice, standardization, software training.

How does someone learn online?

In the past you may have learned in a physical classroom with others, on-the-job, or with a book like a tutorial, often with a test. E-learning is the same – sometimes you're learning alone (called self-paced e-learning), sometimes you're learning with others at the same time, and sometimes you're learning with others at different times. There are many different ways to access e-learning.

What if someone is not very good on the computer?

You don't have to be a computer geek to learn online. In fact, you can learn how to use your computer through e-learning. It could be like learning to cook while reading a cooking book (text), watching a cooking show (multimedia), or even standing next to your grandmother and "helping" her cook (interactivity). How quickly or deeply you learn depends on many things - the level of interactivity you receive, how you learn, and your level of interest. Different people learn in different ways, and e-learning accommodates different learning styles, abilities, languages, ages, and cultures.

What does e-learning look like?

It depends on how the instruction is designed, developed, and delivered - the methodology. For instance, you could see text, graphics, video, audio, and animation on your screen.

How is e-learning different from Web sites with text, graphics, video, etc.?

What defines (good) e-learning is support and promotion of **learning** using instructional methods like questions, problems, graphics, analogies, and exercises. As you can imagine, this can be very subjective and is often debated at length by practitioners. Sitting through a lecture can be considered "training," and "page turning" text can be considered e-learning. Just as traditional training must follow sound instructional strategies, so, too, must online training. However, online training has an additional consideration, which is how to use Internet technology to effectively deliver the training.

The common denominator for all methods of electronic delivery and technology use in learning is **instruction**. The "e-" part, the "Web-based" part, and the "online" part is simply the delivery mechanism for the **instruction**.

What type of interaction is used in e-learning?

Depending on a course's level of interactivity, you could interact (to questions, problems, graphics, etc.) through your keyboard, mouse, or using audio via teleconference or microphone. Again, it depends on the level of interactivity designed into the course and what tools were used to create the course. E-learning is broken into four interactivity levels - Low Interactivity, Moderate Interactivity with Emulation, Intermediate Interaction with Simulation, and Advanced Interaction with Simulation.

How long has e-learning been around?

E-learning has been around since the 1960s and has been evolving ever since, becoming more mainstream in the past several years.

What methods are used to deliver e-learning?

E-learning can be delivered "live" or at "any time." This means learners can learn in the following ways:

> Together – at the same time

> Together – at different times

> Independently (not together)

What types of e-learning products do organizations develop?

Courses, seminars, workshops, online learning portals, chat sessions/discussion groups, and communities of practice are a few types.

Why is e-learning popular?

> You can learn anytime, anywhere.

> It's good for incorporating multimedia.

> It's learner controlled and "patient."

> Content can be fresh and instant.

> It is consistent.

> You can take it on-demand.

> It provides just-in-time training.

> It is less costly to deliver than traditional training.

- It reduces or eliminates duplication of training.
- It generally has shorter learning time.

Why would I use traditional classroom instruction over e-learning?

- When human intervention is required
- When total fidelity to real-world events is necessary (physical/tactile performance)
- When the number of potential users is very small
- When the target audience doesn't have access to computers and/or the Internet

What different types of e-learning tools are available?

The design, development, and delivery of e-learning involve people, hardware, and software. One person or an entire instructional design team can be involved. Hardware normally involves a personal computer workstation capable of handling multimedia applications and a Web browser. Access to a network may be needed, as well as the ability to host content on servers. Software includes authoring applications, various Web editing and graphics tools, and often a learning management system and/or learning content management system. There are also free, open source course management systems for creating online courses.

What type of team does an organization need to implement e-learning?

Typically, personnel involved include instructional designers, graphic artists, programming or authoring specialists, project managers, subject matter experts, quality assurance personnel, a Webmaster or database specialist, and content/instructional writers. Depending on the size and budget for your organization, a team could include one or two people or an entire team of people. Often, this plays into the decision to use a custom content developer, build your own content, or purchase off-the-shelf content.

How do I know what tools and methods are right for my organization?

There are simple and complex tools used to create e-learning. You'll find conversion tools for presentation-type e-learning, tests and assessments, stand-alone authoring tools and authoring tools within an LMS or LCMS, games, software simulations, general Web development, non-software simulations, and prototyping. Selecting the right tool depends on usage, skill of the developer, time, budget, compatibility, and interoperability with other systems.

Are there any industry standards associated with e-learning?

Yes. SCORM is a collection of standards and specifications adapted from multiple sources to provide a comprehensive suite of e-learning capabilities that enable interoperability, accessibility, and reusability of Web-based learning content. See http://www.adlnet.org for additional information.

What is asynchronous e-learning?

Asynchronous learning means learners are not "there" at the same time. In other words, communication between learners does not happen simultaneously - it is time-delayed. In e-learning, this can include online learning delivered via instructor-led classrooms (that are not "live"), self-paced courses, discussion rooms, communities of practice, bulletin boards, or some other types of forums where you read what others have written and respond at a time of your choosing. Recorded synchronous online learning (which was delivered live by an instructor at a previous time) would be considered asynchronous e-learning.

What is synchronous e-learning?

Synchronous learning means all learners are "there" at the same time. "There" can be in instructor-led training (ILT) in a physical classroom or, in the case of e-learning, on the Web (online). "Live online learning," "live e-learning," "live online classroom," and "virtual classroom" are some of the terms associated with synchronous e-learning. The types of events that take place "live online" include meetings, presentations, Webinars (Web-based seminar), live chat, and learning events. Synchronous e-learning is often delivered live by an instructor or facilitator. What differentiates synchronous e-learning from asynchronous e-learning is the capacity for live interactivity.

What is blended learning?

Blended learning involves using a combination of synchronous and asynchronous learning delivery methods to meet learning objectives. Most often, the delivery media blends instructor-led classroom training and e-learning. While the concept has been used by teachers in K-12 classrooms for years, the term "blended learning" is new and is most often associated with organizations seeking to deliver training more efficiently by incorporating technology. Blended learning possibilities are limitless and can also include hands-on training, on-the-job training, emulation, simulation, and mentoring.

What type of infrastructure is required to support e-learning?

Learning technology systems provide the infrastructure for e-learning delivery. You don't have to be a technical mastermind to incorporate e-learning into your organization. Companies providing learning software often offer A-Z service. Alternatively, an organization can create, manage, and maintain their own learning infrastructure – or you can use a combination of both. The decision to "build or buy" will depend on the level of support and customization you need in your organization. It's kind of like choosing a car – if your company already knows how to make "cars" (has the technological capability and resources), then you might choose to build your own learning technology system. Other organizations might just want to "buy" a car off-the-lot or might want to buy off-the-lot but add some additional, non-standard options.

What are the advantages associated with e-learning?

> Flexibility, accessibility, convenience

> Multimedia capability

> Increased fidelity

> Cross-platform capabilities

> Web browser software and Internet connections are widely available

> Inexpensive worldwide distribution

> Ease of update

> Just-in-time, personal, adaptive, user-centric

> Travel cost and time savings

> Can take it multiple times (improved retention, comprehension)

Are there disadvantages associated with e-learning?

Yes. E-learning is not the panacea for organizational learning. There are disadvantages to e-learning, including the following:

> Access capabilities

> Internet connection speed/bandwidth

> Cost (longer development time)

> Developer limitation

> Type of content (not all content is suitable for e-learning)

- Learner motivation and initiative
- Loss of a live (physically present) instructor may cause concern for some learners
- Portability

How do you measure the effectiveness of e-learning?

The same evaluation strategies (Levels 1-5) and processes used in other types of evaluations can be applied to e-learning programs. Return on investment (ROI) studies show positive returns for companies implementing e-learning programs based on cost reduction alone. While recipients of face-to-face instruction have expressed more satisfaction (Level 1) with traditional learning solutions, the learning outcomes are not different (Level 2) for participants of e-learning programs.

How long does it take to develop a typical e-learning course?

The industry average for developing a one-hour e-learning product averages about 250 hours of development time. Acceptable production times are approximately 8-12 weeks for one hour of training, 12-16 weeks for two hours of training, and 16-20 weeks for three hours of training.

What are the various delivery systems for e-learning?

Just as you might use a pen-and-paper sign-in sheet to track attendance in a physical classroom, you would most likely track e-learning "electronically." Most often this is accomplished by using a learning management system (LMS), a system that can manage learners and all types of learning events. An LMS is different from a learning content management system (LCMS) in that an LCMS manages learning content within a database. Both the LMS and the LCMS are software products.

What is an LMS?

A learning management system (LMS) is software that manages learning events and learners and serves as a platform to deliver e-learning. Various systems offer different levels of functionality, with some of the more robust systems offering tools such as competency management and skill-gap analysis. Many LMSs can manage classroom-training events, manage and launch live online learning events, manage physical inventory of training materials, and create and launch Web-based training. Software can be installed on an organization's servers or hosted by the LMS vendor.

What is an LCMS?

A learning content management system (LCMS) manages learning content. The system stores, finds, and retrieves data within a central repository, normally a database, making it possible to search for learning content. Developers can create, deliver, and measure learning results. LCMSs allow for delivery of learning objects (self-contained chunks of learning), allowing greater flexibility and ease of updating content. Software can be installed on an organization's servers or hosted by the LMS vendor. Alternate terms include content management system or course management system (CMS).

What is beyond the e-learning of today?

E-learning continues to evolve in the following ways:

> With new delivery methods - to PDA or mobile phone (called M-learning)

> Via blogs, wikis, and podcasting

> Through open source content, collaboration, communities of practice, and easier-to-use tools

There has been a transition from training to learning to leveraging the power of the Internet to go beyond e-learning through knowledge management, change management, performance support, competency and performance management, and human capital management.

E-Learning Reports

Brandon Hall Research Reports

http://www.brandon-hall.com

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