Trends in Workplace Learning: Supply and Demand in Interesting Times

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The ancient Chinese saying "May you live in interesting times" has perhaps never been more relevant. As the 1990s draw to a close and the new millennium fast approaches, life is phenomenally interesting—and demanding. Professionals who are responsible for workplace learning and performance improvement are squarely in the center of the swirl of exciting possibilities—and requirements—that are emerging.

The inextricable link between rapid technological change and the emergence of the global economy has created the necessity for profound change in the way people and organizations work. As a result, workplace learning is arguably more strategic to the competitive advantage of both individuals and employers than at any point in all of recorded history. So it's a great time to be in this profession. But along with the tremendous opportunity that this period of economic history has brought come unprecedented requirements and responsibilities. The same technological advances that are behind the rapid emergence of a truly global economy are forever changing both the demand for and supply of workplace learning opportunities.

This article is the third of ASTD's annual reports that identify major trends that are affecting the field of workplace learning and performance improvement. The underlying trends that were identified in the first two of these articles (see the November 1996 and 1997 issues of *Training & Development*) are longstanding and not likely to change in the near term.

Four particularly noteworthy demand-side developments are the growing effort given to managing knowledge, the integration of learning and communication functions, a resurgence of interest in leadership development and executive coaching, and the intensifying requirement among employees that career development become an integral part of their employment relationship.

The supply-side developments to follow are those that hold the potential for revolutionizing the way in which work and learning occur: the Internet, intelligent tutoring systems, learning objects, and voice recognition.

Two important developments in the marketplace for workplace learning, where supply meets demand, are the ongoing consolidation within the supplier community and the creation of an electronic marketplace where buyers and sellers of learning products and tools can meet virtually.

Demand and supply—powerful, global forces that cannot be escaped but that can be harnessed to your advantage. So read on for a glimpse of what the world holds in store for you as the new year and the new millennium unfold. And as you read, keep in mind another old saying—"forewarned is forearmed."

The demand for workplace learning and performance improvement

Periods of rapid change create a premium on learning—for both individuals and organizations. Prosperity and growth are the rewards for those who are the fastest at learning and putting their

learning into action; stagnation and decline are the penalties for delay. In an era when it is knowledge rather than physical assets that increasingly defines competitive advantage, the process of managing knowledge becomes a central part of the learning process.

Knowledge management.

According to some observers, the industrial era's successor—the information age, in which white-collar jobs exceeded blue-collar jobs and entire industries arose just to help companies manage and process information—is already at or past the midpoint of its life cycle. The ever-declining cost of processing information has made it universally available. Indeed, information has become a commodity that is readily bought and sold. As a result, it is no longer enough to define competitive advantage. Gone are the days, for example, when banks could compete exclusively on the basis of which had the fastest information technology or which could slice and dice their account information in more ways than anyone else.

Hence, the rapidly growing interest in knowledge as the "new" source of competitive advantage and the realization that we have now entered a new era—the knowledge era. In many ways, this is nothing new at all. A firm's knowledge—the brains of its employees, their know-how, the processes and customer knowledge that they create—has always been a source of competitive advantage. And by extension, so too has been knowledge management—the processes by which a firm creates and leverages knowledge. What is unique about the knowledge era is that knowledge is becoming the primary source of competitive advantage within a growing number of industries. Organizations from industrial-era industries, such as automobile manufacturing, to information-age industries such as consulting are recognizing that they each have a unique storehouse of knowledge, and that the future belongs to those that can grow their knowledge fastest and then apply and use it best.

With the benefit of hindsight, it is apparent that in the knowledge era, creating and leveraging knowledge is the business of business. By all available measures, the stock market is already providing handsome rewards to companies that successfully leverage their knowledge—a phenomenon that will almost surely grow in significance as knowledge-based organizations increase in size and number. A number of firms are anticipating this and looking to knowledge management to enhance, measure, and manage the knowledge of their employees and organizations more effectively.

Why manage knowledge? There are a variety of reasons for the emergence of knowledge management as a real business concern. Among them is the messy transition from industrial-based production and work systems to information-based systems, which rendered many functions and people obsolete. Though downsizing seemed to be the answer of the 1980s, this butcher's knife approach often resulted in the loss of valuable knowledge rather than the financial gains that firms expected. Knowledge management offers, instead, a surgeon's scalpel that sharpens and refines the value of people and what they know.

Certainly, the exponential growth of information technology and the plummeting cost of information processing also helped by laying the technological foundation for the emergence of knowledge management. A necessary, but in no way sufficient, part of most knowledge management efforts is a set of technologies for capturing and synthesizing information from which knowledge can be created and shared—technologies such as intranets, Lotus Notes, electronic performance support systems, and specialized software. These technologies provide not only wide and instantaneous access to information by people inside and outside firms who previously lacked such access, but also to the contextual cues that transform *information* into *knowledge*.

Results from one of the first benchmarking studies on knowledge management, by the American Productivity and Quality Center, suggest several other reasons for its rise, including

- the need to capture what employees learn through customer contact. Empowered employees who had no way of sharing new solutions or innovations.
- internal and external benchmarking as a way of finding best practices
- increasingly global and geographically dispersed operations
- customers seeking firms who leverage knowledge to meet their needs
- the rise of knowledge work and increased need for collaboration
- the need for increased responsiveness and shorter cycle times.

What exactly is knowledge management? Like the fable of the blind men and the elephant, what knowledge management means to people depends on which part they are touching. For many, knowledge management is simply a more contemporary label for what they have already been doing under the rubric of information management, total quality management, training, the learning organization, electronic libraries, and so on. Adding further confusion is that some cast the knowledge management net more widely than others. Karl Erik Sveiby, an early advocate of knowledge management, views it as "the art of creating value from an organization's intangible assets." For others, knowledge management is confined to the management of the codified, formalized, explicit forms of knowledge such as repositories of lessons learned, documents, databases, and company yel-

low pages, rather than all intangible assets. In their book *Creating the Knowledge-Based Business*, David Skyrme and Debra Amidon define knowledge management as "the explicit and systematic management of vital knowledge and its associated processes of creating, gathering, organizing, diffusion, use, and exploitation."

Perhaps the best way to understand knowledge management is to take a closer look at some examples of what companies actually do when they make knowledge management a priority. In a now classic study, Tom Davenport, along with Mike Beers and Dave DeLong, of Ernst & Young found that knowledge management initiatives tend to fall into one of several categories, including

- creating and storing knowledge in repositories
- measuring the financial value of knowledge
- facilitating the transfer of knowledge
- creating a knowledge-sharing environment.

The most common initiative—building knowledge repositories—is intended to take some form of knowledge that has been extracted from people's heads and store it in an information system for later access. For example, Hewlett Packard and Sequent Computer both have systems that store sales-oriented documents—white papers, presentations, marketing collateral—for access by their field salesforces in selling computers. Other knowledge repositories are less structured, consisting of the insights and observations of employees, sometimes called "discussion databases" or "lessons-learned" systems. Some repositories do not hold the knowledge itself, but point to those who have knowledge. Hewlett Packard, for instance, has expert repositories for researchers in its HP Laboratories and Corporate Education groups.

A number of firms have undertaken initiatives to measure and manage the economic value of their knowledge. Two of the most widely known firms that have focused on value are Skandia and Dow Chemical. Skandia, the Swedish insurance company whose focus on "intellectual capital" is perhaps the most widely known, primarily addresses the measurement of value. Dow focuses more on the management of value by harvesting little-used patent and license assets.

Many firms have knowledge transfer, the third type of initiative, as their primary objective—either through technology or human means. BP Exploration has built a desktop videoconferencing system to enable workers at remote exploration sites to exchange their knowledge with each other. UNISYS relies upon "virtual team rooms" to allow members of a particular project team to share files and communicate on a regular basis.

Yet, other initiatives do not address any specific knowledge domain, but rather try to improve the overall knowledge environment by fostering an appreciation for knowledge and a culture of sharing. These projects may focus specifically on the reward systems for evaluating knowledge generation, sharing, or use.

Given the fact that much of the interest in knowledge management has come about because of advances in information technology, it should come as no surprise that most of the initiatives falling into the just-described categories are centered around the introduction or use of information technology. A survey by the Ernst & Young Center for Business Innovation found, for instance, that technology-centered efforts dominated the specific knowledge management projects of the 431 U.S. and European organizations that participated (see the table). The same survey found that information technology (IT) departments were twice as likely to lead knowledge management projects as any other part of the organization.

Types of Knowledge Management Practices

Projects	Percent of Companies With Project Underway
Creating an intranet	47%
Data warehousing/creating knowledge repositories	33%
Implementing decision-support tools	33%
Implementing groupware to support collaboration	33%
Creating networks of knowledge workers	24%
Mapping sources of internal expertise	18%
Establishing new knowledge roles	15%
Launching new knowledge-based products or services	14%

Source: "Executive Perspectives of Knowledge in the Organization", 1997. Ernst & Young Center for Business Intelligence

Knowledge management roles. Companies going down the knowledge management road, even after just a few timid steps, find that it won't happen on its own. Sure, knowledge has been gathered and shared as long as people have been able to communicate, but leveraging knowledge for business success requires that someone have explicit responsibility for making sure it happens and happens well. Hence the rise of the chief knowledge officer (CKO), director of intellectual capital, and chief learning officer (CLO). Though responsibilities may vary from firm to firm, this new executive-level position is typically charged with organizing, capturing, and distributing the organization's knowledge. Some of the most widely known people with titles such as these include CLO Steve Kerr of General Electric (GE), CKOs John

Peetz of Ernst & Young and Judith Rosenblum of Coca-Cola, and Leif Edvinsson, director of intellectual capital for Skandia.

One estimate suggests there may be more than 250 firms in the United States with positions such as these. However, the jury is still out on the value of CKOs, CLOs, and the like. Though slightly more than half of the participants in Ernst & Young's survey said that a CKO could be valuable for their organization, only about 28 percent said that establishing new knowledge roles would make sense for their organization.

Regardless of whether knowledge management is given a seat of its own in the boardroom, large firms especially discover quickly a need for a host of knowledge managers. The knowledge management roles for managing Pricewaterhouse Coopers's intranet KnowledgeCurve and its 150 Lotus Notes servers in the United States is an excellent example. More than 100 people in the firm's knowledge management organization report to Ellen Knapp, its CKO. This number does not include the owner, moderator, and administrator of each discussion group or her "power user" council of more than 200 KnowledgeCurve champions in PricewaterhouseCoopers. These positions are critical for capturing the best knowledge in the organization, ensuring the quality of knowledge, and supporting the smooth operation of the entire system.

No one said it would be easy

No matter what knowledge management projects organizations undertake or how they support them, we already know that road is paved with obstacles and fraught with complexity. Ernst & Young's survey reveals that the top four difficulties most organizations are likely to face fall into the areas of culture, measurement, quality, and money (see the table below). Overcoming technological limitations, by contrast, came in nearly last (15 percent).

Larry Prusak of the IBM Consulting Group warns, "When it comes to successfully managing knowledge, culture trumps all other factors." Some organizations are fortunate to have had a knowledge-sharing culture before beginning to formalize their knowledge management. These firms, typically high-tech or knowledge-driven organizations, according to Davenport and Prusak in their book *Working Knowledge*, have the advantage that they already attract and hire employees who sought and applied knowledge while in school. Other organizations, however, must cultivate such a culture by providing an environment that encourages and rewards the sharing and use of knowledge. People must be given the time and opportunity to share and then be reassured that their contributions will be recognized. Perhaps the most critical condition for overcoming a culture in which knowledge is seen as power is senior management support for knowledge management. Robert Buckman, CEO of Buckman Laboratories, puts it more succinctly: "Frankly, I do not think you can have a successful knowledge project without that proactive entrepreneurial support from the top." Other firms find success by building their knowledge management efforts off of groups or parts of the organization that already share knowledge.

Is knowledge management a passing fad? Today, it does seem that there is more talk than action. Thomas Stewart, the *Fortune* magazine writer who first called the business world's attention to the importance of people's brainpower, warns that knowledge management has the potential for becoming a fad solely because of the money to be made from the information technology tools that frequently support it. But the forces behind its emergence are real and fundamental, and likely to continue.

One thing is certain: Managing knowledge is not a well-defined process. There are many questions that remain unanswered. What knowledge should you keep and what should you toss away? How do you capture the knowledge of chance hallway conversations? How do you avoid the perception that having the latest, best hardware or software equates to managing knowledge? How do you make tacit knowledge explicit? On the other hand, the potential benefits are enormous. Those firms who answer those questions will benefit from knowledge management by

- ❑ increasing the amount of learning that takes place
- ❑ making work less frustrating and onerous
- ❑ making the promise of the learning organization a reality
- ❑ creating knowledge, insight, and understanding that can help people in their lives outside of work.

All of which will be essential to competing in the knowledge era.

Challenges to Sound Knowledge Management

Biggest Difficulties	Percent of Respondents
Changing people's behavior	54%
Measuring the value and performance of knowledge assets	43%
Determining what knowledge should be managed	40%
Justifying the use of scarce resources for knowledge initiatives	34%

Source: "Executive Perspectives of Knowledge in the Organization," 1997; Ernst & Young Center for Business Intelligence

The Implications of Knowledge Management

The newfound focus on managing knowledge is, in many ways, not new at all. Rather, it can be viewed as a natural evolution of management concerns in an era when it is people and the knowledge they possess that define competitive advantage. It may well prove to be the "next thing" after the learning organization. Both of these developments are based on the realization that most of what people know is learned on the job just by talking to other people, milling around the coffee pot, trying out new things, and doing their work. Formal training, though essential, cannot serve as a substitute for these powerful, informal means of learning.

Knowledge management presents both an opportunity and a challenge to workplace learning and performance practitioners. The opportunity lies in the fact that a focus on knowledge management leads inevitably to the recognition that building people's skills and knowledge is the most fundamental driver of organizational success in the knowledge era. Practitioners in workplace learning obviously have a great deal to contribute to knowledge management efforts. The challenges will be at least twofold. One, new skills sets will be required to encourage learning through informal, natural means and to direct that learning in ways that help organizations meet their business goals. Two is the ongoing challenge of demonstrating the value of learning and the process of knowledge management.

Learning and employee communications

The business imperative to accelerate organizational learning has created new functions within organizations to speed up the process of creating, capturing, and disseminating information and knowledge. The same forces that are creating a focus on knowledge management are causing firms to combine their learning and communications strategies. As training moves to learning, more and more organizations are looking to foster a learning environment to piggyback on training or to create an architecture in which learning, both formal and informal, is ongoing and consistent.

As a relatively young company, Qualcomm (founded in 1985), a San Diego-based wireless communications company, did not have an internal communications department. So when the director of the learning department, Tamar Elkeles, decided she needed to better communicate Qualcomm's learning and training initiatives to employees, she created a subdepartment within the learning department, called employee communications. Different from corporate communications, which is located at the headquarters facility and focuses on external public relations, employee communications informs employees about more than just training events; this group has assumed responsibility for communicating the company's training and learning philosophy, as well as its culture and values. The use of the company's intranet Website for information exchange, as well as for more formal distance learning, has been an essential tool in Qualcomm's employee communications efforts.

Employee communications has been a part of Silicon Graphics's learning and development department for some time. Drew Banks, manager of integrated performance support at SGI, believes that intranet-based distribution of information was the catalyst that made combining learning and development with employee communications work. But he thinks that the underpinning philosophy that drives it is the view that organizational communication and learning are both on the same continuum.

Lars Thykier, director of training at Scandinavian Airlines System, agrees: "The border between training/learning and internal communications is increasingly difficult to draw." And, he continues, "There is increasing awareness that internal communications are also learning activities, meaning that there is a need for closer ties between the two strategies."

If a corporate learning department is set up for broad-based corporate learning (not just skill-based training), says Banks, then this combination can make sense. In fact, he says, it is one of the four logical placements of an employee communications department (as shown in table).

The placement of employee communications within an organization should depend on which goal is more difficult to achieve without an organizational linkage. For example, in a command-and-control culture, the first option in the table is best. Additionally, says Banks, any one of these goals could be more critical than the others depending on where the company is in its life cycle. This would mean that the organizational placement of employee communications could change over time.

The increasing overlap of learning and employee communications within organizations originates from the need of an organization to link its functional silos, says Michele Miller, director of knowledge, strategy, and facilitation at Arthur Andersen. Much like the trend toward combining learning and performance consulting, organizations are melding learning and internal employee communications. Although many organizations have recognized this need, says Miller, they are taking different approaches to address it. Some organizations, for instance, have located the employee communications department under the

training department umbrella. Other organizations, like Arthur Andersen, are looking at creating stronger partnerships with broad-based groups that may have organizational responsibility for the knowledge and communications areas. This has resulted from the blurring of distinctions among communications, knowledge, and learning and from the increased importance of a holistic approach to address their different dimensions.

The desire to move learning from discrete interventions to a complete learning environment appears to be pushing the integration of the learning and employee communications departments. Knowledge management, formal and informal learning, performance improvement, and intellectual capital enhancement appear to form the basis for this push, as well as a desire to help employees better understand their organization's vision, mission, culture, and values. No longer content to work within the constraints of functional silos, learning directors have begun to take a more systemic view of informing and developing employees through the creation of their own, or integration with existing, employee communications departments.

Appropriate Placement of the Employee Communications Department

Placement	Goal
Reports directly to the CEO/COO	Access to information, coordination of executive messaging
Within a combined external-internal communications department	Synchronicity of communication
In the learning and development department	The development of an environment for organizational learning
Reports directly to the vice president of human resources	An emphasis on the company's culture and people

Source: Drew Banks, Silicon Graphics Incorporated

Leadership development

Leadership development is, arguably, the most critical issue faced by organizations today. While there is no shortage of other critical issues for business leaders—ranging from global economic crises, the Y2K problem, finding qualified workers in a tight job market, and keeping up with rapid shifts in technological advancements—none of these problems can be successfully addressed and resolved without the benefit of thoughtful, creative, and visionary leaders. Jay Conger, professor and chairman of the Leadership Institute at the University of Southern California, believes that although the search to find the best leaders is not a new one, there is a "newfound interest in the idea of leadership itself...[and] a radical shift in what we know about the process of leadership."

It's seen in many successful businesses that the adage "leaders are born, not made" is not universally accepted. For example, PepsiCo, Royal Dutch Shell, Johnson & Johnson, and General Electric have created their own leadership development systems. One of the first steps taken by many forward-thinking organizations is to identify their corporate culture and build their leadership development system around it. To develop leaders, organizations must build a supportive organizational framework. Stratford Sherman, in his article "How Tomorrow's Best Leaders Are Learning Their Stuff" (*Fortune*, November 27, 1995), says that "companies that take an architectural approach, putting in mechanisms to produce the right kind of behavior, don't need to look outside for leaders." Sherman writes that by institutionalizing the leadership system, an organization need not so much teach leadership as provide an environment in which it will flourish.

Peter Senge, of MIT's Society for Organizational Learning, agrees: "You don't teach people a different way of being, you create conditions so they can discover where the natural leadership comes from." It is the creation of this type of structure that provides potential leaders with the right experiences and intellectual support that will enable them to grow, learn, and lead. To some people, the right support means an emphasis on soft skills over hard skills. Roger Enrico, the CEO of PepsiCo, believes "the soft stuff is always harder than the hard stuff."

The leadership demand. All businesses need managers who know how to administer their units and presumably have hired the people with the skills to do just that. It is the other skills, the ones that galvanize and energize an organization's employees, that must be developed in future leaders. Once an organization has determined what makes a good leader in its culture and environment, designing, implementing, and aligning the actual leadership development system becomes critical.

For a growing number of organizations, in-house programs connected to an overall development system are replacing (or are used in conjunction with) university-sponsored programs. Robert Fulmer of the Graduate School of Business at William & Mary College says in his *State of the Practice* monograph that "over 75 percent of all executive education dollars go to customized [organizational] programs, rather than to traditional public or open-enrollment courses offered by business schools." *The Executive Education Market Overview* undertaken by the Graduate School of Business Administration at Harvard University states that "corporations are taking an increasingly active role in developing and delivering their own programs" rather than depending on business schools to design and

Leadership at All Levels

Identifying and developing leaders in the executive ranks, or even in the pool of people who may be headed for the executive level, will not be sufficient to ensure an organization's future success. Increasingly, organizations are realizing that the success of their operations depends on nurturing leadership throughout the entire staff. A 1997 survey of more than 5,000 leadership development professionals, conducted by Linkage, asked respondents to identify the most critical issues in leadership development. The top 10 issues:

1. Benchmarking best-practice leadership development programs
2. Creating leaders at all levels
3. Designing effective leadership development programs
4. Developing managers into leaders
5. Assessing leadership potential skills
6. Leadership models for managing change
7. Developing coaching and mentoring skills
8. Measuring the ROI of leadership development
9. Identifying and developing leadership competencies
10. The learning organization.

Source: "National Survey on Leadership Development", 1997; Linkage Inc.

Although a handful of organizations have long recognized the importance of empowering employees at all levels to become leaders in their work, the vast majority could safely be said to have stayed on the sidelines. Until now. The fact that "creating leaders at all levels" ranked so high on the list is striking.

Examples of successful leadership development now being conducted in organizations through embedded systems include the computer giant Intel and PepsiCo. These organizations believe that by integrating the leadership process throughout their organizations, employees will develop the capacity to spot gaps, trends, and opportunities, and they will have the necessary skills to effectively address these challenges. MIT's Senge supports this idea and espouses a "community of leaders" within organizations drawn from local line persons, business unit managers, executives and top-level managers, and internal networkers—employees without formal authority who can gather and disseminate information and ideas by virtue of their frontline position.

deliver their executives' education.

Noel Tichy, a professor at the University of Michigan, says the most effective organizational programs have three key ingredients: 1) a proven leader from within the organization heads up the effort, 2) a small, select group of participants works with the leader over time, and 3) real business projects are initiated so that participants must actualize what they have learned.

Participants in many exemplary leadership programs have responsibility for real work activities, also called action learning, to make the development process relevant. In this way, organizations not only challenge future leaders by encouraging risk-taking behavior, but also oftentimes solve the knotty problems that plague organizations. This also emphasizes the importance of workplace experiences. Many executives cite workplace experiences as the defining moments in their careers. "The majority of peak learning experiences occur on the job," says Steve Kerr, director of GE's corporate university at Crotonville. "Only 10 percent [of executives] cite formal training [as the driver of development]."

Key to many leadership development programs are the endorsement and participation of an organization's CEO. At General Electric, CEO Jack Welch has been attending workshops and planning sessions and conducting biweekly sessions with managers for the past 16 years. Tichy believes "the most important responsibility of a leader is to personally develop other leaders," a belief obviously endorsed by PepsiCo's Roger Enrico. Enrico devotes a great deal of his time to PepsiCo's leadership development programs and believes that 1) proven leaders are the best developers of other leaders, 2) leaders who develop other leaders must have a "teachable" point of view on how to grow a business, and 3) leaders need to have a development methodology.

Outlook. Similar to other corporate undertakings, the leadership development process needs to be proactive rather than reactive. Not only do leaders need to be able to meet future demands, but also in some instances the leadership process will *create* future demand as it becomes interwoven with an organization's strategic process. Jim Bolt, of Executive Development Associates, reports that, presently, within a few progressive firms "[leadership] programs go beyond communicating strategy to a process for...shaping strategy." This gives future leaders the ability to renew their organizations' vision, mission, and strategic direction as a part of the leadership development process. Moreover, Bolt identified these trends he believes will drive changes for the leadership and executive education field in the future:

- the integration and interdependence of strategy and executive learning
- the need for fully integrated executive leadership development systems
- an increased focus on individual development
- the endurance of leadership as the critical focus for development
- the growing realization of the importance of innovation and entrepreneurship
- the rapid ascent of action learning as the preferred learning paradigm
- the importance and impact of technology.

Additionally, Albert Vicere of Penn State University and Fulmer identified several trends in the executive leadership development process. They believe that leadership development programs are becoming more customized and strategic. They're also getting shorter, more focused, larger scale, and cascaded. And they are becoming action-learning projects with measurable results.

Incorporating program components such as those listed above into the leadership development process add up to an enlightened new way of developing

business leaders. This is a much different approach from the patriarchal and hierarchical style of past leaders, and looks to motivate and coalesce rather than dominate and subdue. It is as good for business as for the employees they hope to inspire because the rapidly changing business environment will need future leaders who can think outside the box and draw inspiration from all types of experiences.

"There is at least one point in the history of any company when you have to change dramatically to rise to the next level of performance," says Andy Grove, former CEO of Intel. For many global organizations, now is that time, and the future success of these organizations depends on the next generation of leaders who can move them into the new millennium.

Implications of the Focus on Leadership Development

The development of leaders is an ancient practice, in which modern-day practitioners of workplace learning have considerable expertise. There do, however, appear to be several important developments in this domain. One is the newfound urgency that an increasing number of organizations are placing on leadership development. Two is the growth of customized, action-learning-oriented development grounded in the daily needs, struggles, and evolution of an organization. Three is an emerging interest in developing leaders at all levels throughout an organization.

Each of those three developments suggests that the role of workplace learning practitioners will continue to grow in both magnitude and strategic importance. But it is the third development—the emerging interest in developing leaders at all levels—that may well prove to be most exciting, by opening up vast new opportunities for the profession to contribute both to the success of organizations and the people in them.

Executive coaching

What about the leaders who have been identified, assessed, developed, and have made it to the top? How can they learn to do their difficult, demanding, and sometimes lonely jobs more effectively? Enter executive coaching.

Though the informal practice of coaching executives has been around as long as there have been executives, the formal procedure of assigning an external consultant to a single senior executive is fairly recent. As noted by Robert Filipczak in "The Excellence Coach: Helper or Healer?" (*Training*, March 1998), the occurrence of this specialized type of mentoring has experienced an exponential increase within the last few years. As an example, Coach University, an online organization offering telecourses in executive coaching techniques founded in 1992, advertises that it trains more than 70 coaches per year, recruiting students from 40 states and five different countries.

Despite (or perhaps because of) their growing numbers, executive coaches command a hefty price. Hiring an executive coach can run up to $2,500 per day. And many coaches require a three- to six-month commitment. This financial commitment, combined with a time commitment that is perhaps even more significant, can make the decision to invest in this type of one-on-one training critical.

Why hire an executive coach? The popularity of executive coaching is most likely driven by the twin forces of turbulent organizational environments and the heightened criticality of effective executive leadership. Executives must be able to draw heavily from their store of knowledge and skills. However, the very environment in which they operate can serve as a barrier, blocking out opportunities for personal and professional development. Access to developmental tools such as informal training or peer feedback is often impractical. Political pressures and personal agendas can get in the way of honest communication, and many executives may feel it is more appropriate and safer to bottle up their emotional and developmental needs while in the workplace.

In addition to an increasingly difficult organizational environment, the criticality of effective leadership has never been greater. While an ineffective mid-level leader can create confusion and resentment, the damage can usually be contained so that it does not spread throughout the organization. In the case of an ineffective executive, however, the resultant damage can cripple or even kill an organization's prospects. Therefore, any gain in executive productivity realized from executive coaching is likely to have an extensive impact on the overall organization.

Finally, in some cases, executive coaching can salvage an unhappy executive. If even one solidly performing executive is retained, the organization can save many thousands of dollars by avoiding the cost of recruiting, hiring, and training a replacement. In short, executives represent a huge financial investment, and any procedure that has the potential to increase their effectiveness on the job could be well worth the cost.

What is executive coaching? Though it might seem that the practice of executive coaching began recently—and suddenly—the concept of assisting executives on an individual basis is not new. In the past, executives who were deficient in a particular area, usually interpersonal skills, were referred to internal consultants such as industrial psychologists. Filipczak notes that executives often grudgingly referred to this practice as "charm school" and belittled its intended effects. More recently, a handful of management firms have developed practical strategies for executive development in areas such as self-aware-

ness, time management, presentation skills, and interpersonal competency.

Executive coaching has typically been built around a specialized one-to-one relationship between the executive and her or his coach, similar to the relationship shared between professional musicians and athletes and their coaches. According to the Woodstone Executive Institute, performance consultants to executives in the restaurant, retail, and service industries, "World-class executives, like world class athletes, need to be coached to help them achieve their highest personal potential and the potential of their teams. Effectiveness in leading teams is a skill that is learned on the playing field with a committed, capable coach."

Unlike a coach for a professional musician or athlete, however, executive coaches are not necessarily expected to have an expert's knowledge of the domain in which their client operates. An executive coach is not a business partner. Instead, according to Robert Lee of the Center for Creative Leadership, an executive coach is "an expert on the learning process." Although the specific goal of each coach-to-client relationship may be different, in all cases the executive coach is expected to provide an in-depth knowledge of how to help the executive learn—learn to listen, learn to be self-aware, learn to be a better leader.

Executive coaching has also been taken a step beyond this one-to-one relationship by using instead a team of coaches that combines industry specialists and organizational psychologists. This strategy seeks to offer a broader range of perspectives, coupled with in-depth knowledge of a specific industry.

CCL, a forerunner in leader development research, notes that there are important unanswered questions about both the theory and practice of executive coaching, including who learns best from a coach and who serves well as a coach. These questions remain unanswered: Is executive coaching a passing fad or solid investment? Is it simply a "Rolex with ears"—a symbol of status and a potential fashion accessory? Or does it represent a solid investment in leader development and organizational growth? The rapid expansion of this field suggests that the need on the part of today's executives for intensive, personal, one-to-one attention is real and pervasive. Only time will tell, however, whether the benefits of executive coaching will outweigh the considerable costs.

Implications of Executive Coaching

"Executive coaching may be considered a type of outsourcing; the need for a coach is ad hoc, and it is not worth maintaining someone on the payroll only to let them go when the need for them is gone," comments Donald Pierce of the Woodstone Institute. However, if the trend toward increased use of and reliance on executive coaches may serve as any indication of the future of executive training and development, it may be wise for training professionals to begin to explore and define their roles within this unique training process.

Virtually no systematic empirical research has been conducted on the processes or outcomes of executive coaching. Issues such as the durability of executive behavior change and the effect of coaching on related long-term organizational outcomes have yet to be explored in depth. Yet, even without evidence of success, executive coaching is on the rise. If trainers have not been involved with monitoring coaching resources and selecting coaches for specific needs within their organizations, why not? If they should be involved, what role should they play?

The demand for career development

The fast pace of technological change has brought about an unprecedented level of demand for highly educated, skilled workers. The wage premium enjoyed by the most highly educated employees is at an all time high, as is the increment in earnings associated with receiving additional training at work.

All of the available evidence points to the clear conclusion that the demand for the most highly skilled workers is outstripping the supply. After years of downsizing, rightsizing, and outsourcing, the labor market has shifted from a buyers' market to a sellers' market. At the same time, workers have heard the message that their employers have preached for years: Workers must take responsibility for their own skills development. They have taken that message seriously.

The implication is that in job markets that are very tight (a sellers' market), workers are beginning to demand excellent training and career development as a benefit of employment. Increasingly, workers cite career development opportunities (or the absence thereof) as a primary determinant of their decision to stay with (or leave) their current employer.

Major studies recently released by Aon Consulting, William M. Mercer, and the Hay Group all point to the same conclusion. The authors of the Hay study, which analyzed responses from half a million employees in more than 300 large organizations, state that "we have found that despite the common wisdom that feelings about job security and high workload lead people out the door, there is virtually no difference in the ratings on these items given by the committed group and the group that says it is likely to leave…. Although many people finding new jobs in the current tight labor market do report receiving higher pay, pay is not one of the top three or four distinguishing factors between the groups—though it is important."

The Hay study reports that favorable responses to the following questions are most highly related to an employee's commitment to stay with his or her current employer:

1. How would you rate your overall satisfaction with your company at the present time?
2. Overall, how would you rate the company as a place to work?
3. Do you have a chance to learn new skills and develop new talents?
4. How would you rate the company on treating you with respect as an individual?
5. How would you rate the company on overall compensation?
6. Overall, how satisfied are you in your job?
7. When things go well in your job, how often are your contributions recognized?
8. How would you rate the company on the ability of top management?
9. How would you rate the company on providing training so that you can handle your present job properly?
10. How well does your supervisor let you know what kind of job you are doing?

Four of these 10 items (questions 4, 7, 8, and 10) are the result, at least in part, of the effectiveness of an organization's management and leadership development programs. Two of these 10 items (questions 3 and 9) are the direct result of an organization's training and career development strategies. In sum, the Hay Group's research suggests that one of the best ways to retain talented people is to provide them with high-quality education, training, and career development opportunities. Though money matters, it appears to have taken a back seat to career development.

Alas, the bad news is that this same study found that employees report that the effectiveness of their employer's training function was low relative to almost every other indicator of effectiveness. So it appears that in most organizations, there is ample room for improving training and career development opportunities, and that doing so would result in significant improvements in employee retention.

Implications of the Increasing Demand for Career Development

The growing wage premium enjoyed by highly skilled workers has sent a powerful signal that education and training matter. At the same time, senior management has been consistently sending the message that employees must assume responsibility for the development of their skills. These messages have not been missed; there is mounting evidence that workers are voting with their feet by leaving. They are assuming responsibility for developing their own skills, in large part, by quitting those organizations where their prospects of development seem poor in favor of organizations with more promising career development opportunities. The paradox is ironic. As a result of years of preaching self-responsibility in the domain of skill and career development, competitive advantage is now accruing to those firms that take this development most seriously.

This is obviously very good news for practitioners of workplace learning. It suggests that there is no need to be shy about the strategic advantage that workplace learning represents. Among the many contributions that learning makes to an organization, the central role it plays in helping to retain employees is becoming increasingly clear.

The supply of workplace learning

The same technology that is revolutionizing work holds the promise of revolutionizing learning, as well as how learning and work occur together. To date, most of the discussion and excitement about learning technologies have centered around how these technologies can make learning available anytime, anywhere, in any amount, and at a lower cost. Although these benefits do make the administration of learning programs significantly easier, they do not begin to scratch the surface of what the learning technology revolution has to offer. Learning technologies hold the promise of forever altering the process of learning.

If today's multimedia course designers simply digitize the same information that used to be delivered by live instructors, then an incredible opportunity will be missed. Making information available anytime, anywhere, in any amount, and at a lower cost is only an extension of a 15th-century revolution called "the printing press." Gutenberg's printing press, in combination with an acceptance of the vernacular language, gave people the same benefits being touted today as benefits of the learning technology revolution. When compared to the average online courses available today, books are no less accessible or interactive. Learners can control how much of a book to read, when to read it, and who to read it with. They can also pick up a phone and discuss the book with another learner anytime they want to.

Learning has interesting parallels with the scientific principle of entropy. The entropic principle states that matter, which is composed of molecules, will constantly seek a simpler and simpler form. In other words, things will disintegrate continually over time because they are composed of molecules that want to return to their original form. Although we are inclined to believe that technology has opened the floodgates of information, it is really a natural occurrence that has been gaining momentum for at least 800 years. Technology has only provided a vehicle for transporting the information to individuals.

Today's technology can enable learners and educators to finally break free of the "teaching by telling" paradigm. As Don Tapscott comments in his book *The Digital Economy*, network computing now makes it possible to "customize down to the individual." Just as products can now be easily customized, learning can be customized to fit an indi-

vidual learner's needs and interests. Rather than have professional educators assemble information into "topic packages," they will break down information into learning molecules—learning objects—that learners can reassemble and order based on critical their thinking skills and levels of understanding.

In *The Digital Economy*, Tapscott enumerates these Six Themes of the New Learning:

1. Increasingly, work and learning are becoming the same thing.
2. Learning is becoming a lifelong challenge.
3. Learning is shifting away from formal schools and universities.
4. Some educational institutions are working hard to reinvent themselves for relevance, but progress is slow.
5. Organizational consciousness is required to create a learning organization.
6. The new media can transform education, creating a working-learning infrastructure for the digital economy.

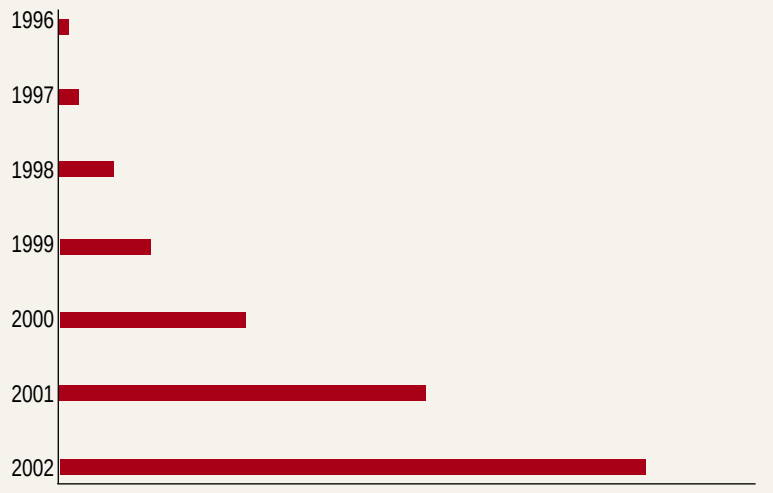
Themes 1, 2, and 6 are particularly relevant to the profession of training and development. The job of learning professionals is to devise innovative ways to help learners find and assemble information, to offer learners important questions to consider, and to make the process of self-discovery more efficient and practical. Today this is more important than ever, as we strive to keep pace with the unfolding knowledge era and with global competition. As stated by J. Rosow and J. Hickey in their book *Strategic Partners for High Performance: Part 1:* "Knowledge capital represents the only remaining source of competitive advantage for organizations. Most other major components of competitiveness are universally available: Natural resources can be bought, capital can be borrowed, and technology can be copied. Only the people in the workforce, with their skills and commitment, and how they are organized, are left to make the difference between economic success and failure."

Four key developments in learning technologies

The fast-expanding digital realm is creating all manner of new efficiencies in the way companies manage their businesses—including a growing emphasis on technology-delivered training. Four developments in the learning technology arena promise to accelerate the trend toward technology delivered training.

Training professionals who have been struggling to keep pace with the state of the art in learning technologies are as likely to be as frustrated as any other manager coping with the digital revolution. As many have come to realize, the task calls for much more than tracking a moving target; a better analogy would be surveying a fast-growing bubble whose surface represents the latest information technologies. As the bubble expands, the scope of technologies grows exponentially.

The Market for Web-Based IT Training, 1996-2002



Source: International Data Corporation

To help filter the burgeoning array of technology contenders, we've identified developments in four specific areas that promise far-reaching impact in the learning technology arena. One of the four, the Internet, comes as no surprise. But its growth in the last two years has outpaced even the most ambitious forecasts, and its impact on the business community at large and the training field in particular continues to be underestimated.

The second technology, intelligent tutoring systems, is an approach to training delivery that has been brewing in federal and university research labs for decades, but has recently begun to benefit from advances in artificial intelligence and other areas.

Object-based learning, the third topic in this section, is a corollary to the field of object-oriented programming that may usher in a new paradigm in the way learning is organized, delivered, and stored.

Finally, voice recognition technology, heralded in recent media reports as "ready for prime time," is beginning to be harnessed in ways that enhance interactivity with learning technologies and that free workers from their keyboards.

Each of these technologies is in a different stage of evolution, but all appear likely, if not certain, to widen the boundaries of technology-based training. Following are overviews of each technology, including current capabilities and development trends, early application examples, and forecasts from experts on their future impact.

The Internet. The migration at many large organizations to Internet-based training (IBT) is al-

ready well underway—whether by harnessing the data network as an economical distribution mechanism for computer-based training, as an electronic "correspondence course" approach, or as a platform for interactive multimedia CBT. But the growing momentum of Internet-based commerce in general and IBT in particular is astonishing if several recent forecasts are borne out.

In its most recent study of Internet-based training in the United States, International Data Corporation, an Internet market research firm, forecasts an explosive growth of IBT in the information technology arena over the next five years. IDC estimates that IT-related IBT accounted for $197 million in 1997, a figure that will surge to more than $5.5 billion in 2002—a compounded annual growth rate of nearly 95 percent (see the chart on page 63.).

"What we're seeing is a maturation of IT infrastructures to accommodate Web-based training, high interest among companies to pilot online learning systems, and a growing pool of knowledge on how to go about it successfully," says Ellen Julian, IDC's research manager for education and training markets and author of the study, *Emerging Market for Web-Based Training 1996-2002,* published by the Framingham, Massachusetts-based company in March 1998.

"We're entering the steep part of the growth curve," says Julian, citing a large influx of start-up companies entering the market and the stirrings of a merger-and-acquisition frenzy among the larger players. Continuing technology enhancements are fueling interest in IBT options, she adds. "Just two years ago, email chat was the state of the art in instructor-led IBT," she notes. "Now companies are implementing live, real-time videoconferencing and collaboration over the Internet."

"But it's not just the technology; it's the smarts around taking the technology and putting it to effective use that is aiding IBT growth," says Julian. Her study states that market growth will be hastened by a shift from hybrid approaches such as Web/CD-ROM to purely Web-based delivery and an expansion of value-added services from IBT providers and consultants.

Technology consultants The GartnerGroup sees growth of the Internet in terms of a "cyclonic convergence" of Internet-related technologies and content that will yield a new "networked information era." Says the Stamford, Connecticut-based IT research and consulting firm, "The Internet-enabled networked information era will occur by 2003, when the majority of the world's information (such as published content) is created, stored, revised, published, archived, and integrated digitally and available instantaneously through electronic transmission."

The Internet is fast becoming entrenched in the daily lives of many, which will encourage its use as a training medium. A June 1998 survey of Internet use by the Pew Research Center found that one in five Americans access the Web for news at least once a week, nearly quadruple the number from a similar survey just two years ago.

Indeed, market analyst Forrester Research is forecasting a growth in electronic commerce over the Internet from roughly $22 billion this year to an estimated $350 billion by 2002, reflecting the growth of both business-to-business transactions and sales to consumers.

The Internet's impact on commerce is being felt in international markets as well. IDC predicts a surge in e-commerce in Asia-Pacific markets, including a jump in total Internet-related commerce from $1.93 million in 1996 to $1.04 billion in 2001. A swelling of the installed base of Internet-capable computers and service providers will fuel the increase. Analysts expect to see the number of users accessing the Web in Asia-Pacific to grow from 25.6 million at the end of 1996 to 71.3 million by the end of 2001.

As the number of people using computers and accessing the Internet continues to grow, new levels of familiarity and comfort with these technologies will be inevitable. Such familiarity will further open the door to IBT, as evidenced by the dramatic growth of online educational institutions, such as the British Open University and the University of Phoenix, which has grown from fewer than 10,000 students in 1990 to nearly 50,000 in 1998.

Those rosy forecasts of continued Internet growth are being tempered in some quarters by growing concerns over the ability of the data network that underpins the Internet to keep pace with usage. Although data-compression techniques and infrastructure upgrades are yielding improvements in the volume of content that training providers can distribute over the Internet, some analysts see a coming bandwidth crunch and ominous scenarios.

In a commentary in *ComputerWorld*, IDC senior vice president John Gantz warns that, based on IDC's demand forecast, Internet lapses are inevitable in the short to medium term. "When you do the math, bandwidth demand grows from about 200 trillion bits per day (BPD) in December 1996 to 9,000 trillion BPD in 2001 and 220,000 trillion BPD in 2006." Says Gantz, network brownouts will likely become more frequent as network providers struggle with those exponential increases.

Robert Metcalfe, who invented Ethernet network technology, has predicted that the Internet will collapse as a result of excessive volume before capacity can be upgraded. Thus far, two of Metcalfe's predicted "gigalapse" deadlines have passed without such a catastrophe.

The U.S. Department of Commerce has sounded its own warning over Internet stability as a result of spiking usage rates. In an April report, *The Emerging Digital Economy*, an otherwise upbeat assess-

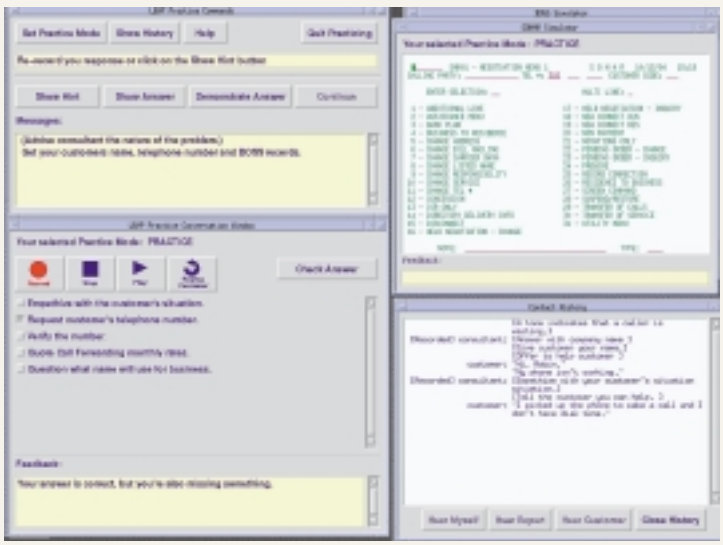
ITS in the Field: US WEST

The Defense Department isn't the only game in town in terms of ITS development. A system developed and implemented at telecommunications provider US WEST is often cited as evidence of the technology's promise. The Learn, Explore and Practice ITS project was developed by Charles Bloom of the Boulder, Colorado-based firm's technical staff. LEAP harnesses several features that distinguish ITS from standard CBT, with the exception of voice recognition technology, still primitive when LEAP was developed in 1992.

"LEAP is a computer-based interactive learning environment that accurately emulates the work environment of a customer contact employee and is capable of intelligently coaching users in how to perform that job," says Bloom. The system provides users with realistic learning activities in the form of scenarios to practice, coaching assistance as needed or requested, proactive instructional strategies, and opportunities to reflect on performance at the completion of each scenario. LEAP's performance, including detailed studies comparing it with other training interventions aimed at the target audience, is well documented in the ITS research community, including a review of the project in a 1996 compendium of ITS research, *Intelligent Tutoring Systems* (Springer-Verlag, 1996).

"To create an interactive instructional environment for the customer contact job requires the ability to simulate customer contacts—the milieu in which a customer contact employee works," says Bloom. The system does that by using pre-recorded simulated customer calls and by recording how the employee responds. The recorded response is then compared to a model response that learners use to identify errors or skill gaps. Similar to other ITS systems, LEAP appraises an employee's skill level and selects training material based on the assessment. The student model is used by LEAP to make inferences about a user's various skill levels and maintain a record of items, such as the last topic practiced by a user and the number of times each contact has been practiced.

The system, programmed before the age of Java, is showing its age and is in limbo as US WEST ponders Web-based training options. Bloom says the system has to compete with other training technologies for limited resources. "But we're not about to forget the potential for this technology," he says.



The LEAP system developed by US West Technologies

ment of the Internet's role in global commerce hinges on the ability of telecommunications providers to upgrade their capabilities. "Greater competition in telecommunications and broadcast industries should be encouraged so that high-bandwidth services are brought to homes and offices around the world," the report states.

Bandwidth worries may evaporate in the face of new data delivery technologies, including digital subscriber lines (DSL), cable modem networks, and satellite transmission systems. Those technologies, which boast transmission rates far above standard 33.6-kilobyte transmission speeds over ordinary phone wires, are being rolled out to wider audiences in the United States. But both DSL and cable modem networks are susceptible to usage surges that degrade transmission speeds based on their shared data pathway architectures, analysts say. And cable modem and satellite systems suffer from lower "upstream" data speeds that hinder performance.

Companies that invest in their own intranets can dodge the bandwidth issue—at least as far as the firewalls that separate their networks from the public Internet—by using high-bandwidth fiber optic cable. But interoffice extranets that connect separate facilities run through the same data pathways as the Internet and are subject to the same electronic traffic jams.

For training providers, the immediate challenge lies in developing IBT that fits through today's constricted data pathways but still has the impact and immediacy of multimedia CBT. IDC's Julian, who surveyed large off-the-shelf IBT training providers and developers of IBT authoring products as part of her study, says that the survey participants are using creative strategies to provide interesting content with low data transmission volumes.

"If you try the demos of certain online learning providers, you find all manner of capability, so it all depends on what the customer is looking for," she says. "Real-time collaboration over the Internet is going to take a lot of bandwidth, but standard CBT with streaming audio is a different story."

Intelligent tutoring systems. It has long been the objective of many CBT developers to combine a CBT system's self-paced interactive learning environment with "intelligence" that tailors training to a learner's needs and allows voice-based interaction. And with significant recent advances in the areas of artificial intelligence (AI) and voice recognition technology, the goal of intelligent CBT—or intelligent tutoring systems (ITS), as it is known in research circles—is fast materializing, researchers say.

A handful of ITS systems that meet some of the seven attributes agreed to by leading researchers in the ITS arena as definitional characteristics are al-

ready in the field in both U.S. Department of Defense and private sector applications (see the box). Those systems, which include pilot systems for military technicians and broader ITS rollouts in telecommunications and other areas (see the sidebar, ITS in the Field: U S WEST), only hint at the extensive capabilities ITS promises.

"We're probably less than five years away from full-blown, robust ITS systems," says Beverly Woolf, research associate professor of computer science and director of the Center for Knowledge Communication at the University of Massachusetts. Woolf, who has focused on ITS and multimedia training for the past 15 years and has written 50 papers on ITS-related research, says technology hurdles including natural language recognition and AI implementation are falling faster than anyone had anticipated.

"ITS refers to advanced instructional software with certain features that set them apart from CBT, including generativity, mixed-initiative dialogue, interactivity, model-based instruction, and self-improvement," notes Woolf. "Our data suggests that, in general, the more robust an instructional system is with regard to those features, the more effective the system is instructionally."

Studies conducted by Woolf and researchers with the U.S. Defense Department show a marked improved in ITS over standard CBT, including baseline page-turner-type CBT applications and interactive multimedia. The studies, undertaken at the behest of Congress to validate continued research and development of ITS technology, compared simple ITS implementations with comparable CBT in military, adult education, and higher education environments. Some 400,000 subject hours of instruction went into the comparative analysis.

"Our studies show a 50 percent reduction in the amount of time to train to the same criteria" using ITS, says Wesley Regian, who heads ITS-related research with the U.S. Air Force Research Center. "If we hold training time constant, we saw a 34 percent increase in student performance over a given amount of training time. We were surprised ourselves at the gains made by ITS systems over conventional CBT."

Regian is credited with developing seminal prototype ITS systems for the Air Force, including a widely cited ITS that trains air traffic controllers at the Air Force's ATC training center in South Florida, and an ITS that features "Steve," a computer-based avatar who trains F-15 maintenance technicians.

The reason for the striking gains in impact by ITS is its ability to assess a learner's needs (student modeling), to present needed material accordingly (generativity), and respond to learner actions and questions (interactive and mixed initiative capabilities). While research in the cognitive sciences and instructional design and advances in programming languages have benefited ITS development, the technology has been awaiting improvements in voice recognition and natural language comprehension to achieve its full impact, researchers say. Recent advances in voice technology bode well for next-generation applications.

"It was ridiculously expensive and difficult to build these systems 10 years ago," says Regian. "Now, equipment cost problems have solved themselves, and we have third-generation authoring languages that make them easier to build and easier to change. And we've finally got workable voice technology."

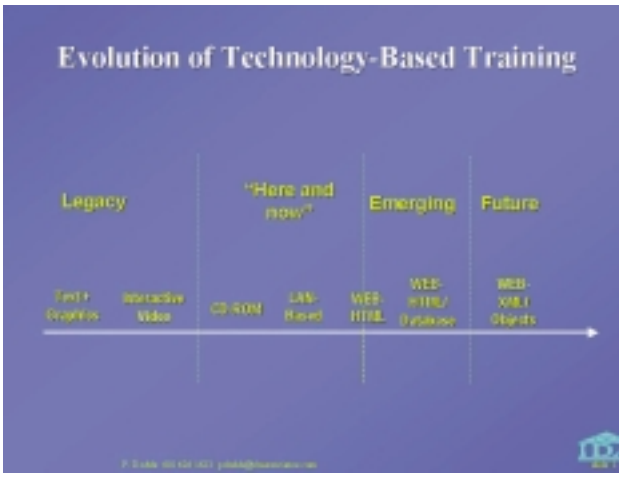
Researchers discuss the collective capabilities of ITS in terms of a pedagogical agent that embodies the system's intelligence and interactive capabilities. In the case of the Air Force technician training ITS, the pedagogical agent takes the form of a virtual instructor. In other ITS applications, the agent does not take virtual form but is at work in the background assessing competency and choosing instructional material accordingly.

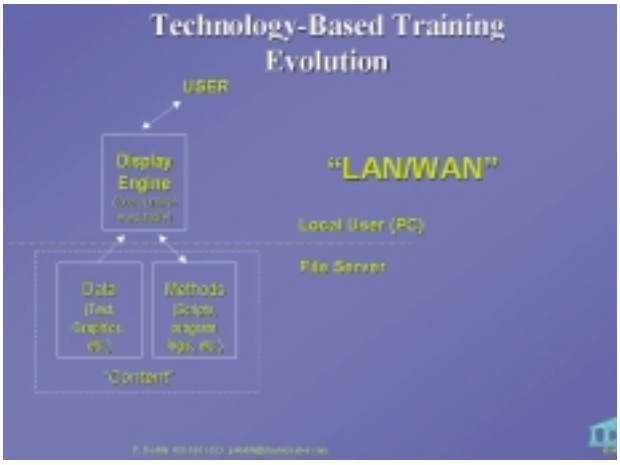
"Steve shows you how to do a procedure, then he critiques you as you perform it," Regian says. "He may decide to give you a remedial brush-up in a given task based on your performance, or go over certain areas where he thought you were a bit hesitant in responding. Then he tests your ability to perform the procedure." Learners are able to ask Steve questions from a pull-down menu, but voice recognition advances will soon improve interface capabilities.

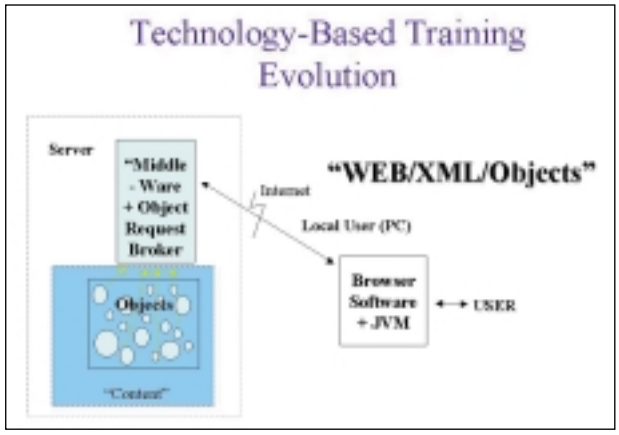
Attributes of Intelligent Tutoring Systems

Generative. The capability to generate appropriate instructional interactions at run time, based on learners' performance.
Mixed-initiative. The capability to initiate interactions with a learner as well as to interpret and respond usefully to learner-initiated interactions. Natural language dialogue is sometimes a focus of this feature.
Interactive. The provision of appropriately contextualized, domain-relevant, and engaging learning activities.
Student modeling. The capability to assess the current state of a learner's knowledge and the implied capability to do something instructionally useful based on that assessment.
Expert modeling. The capability to model expert performance and the implied capability to do something instructionally useful based on the assessment.
Instructional modeling. The capability to make pedagogical inferences and decisions based on the changing state of the student model, based on the prescriptions of an expert model, or both.
Self-improving. The capability to monitor, evaluate, and improve its own teaching performance as a function of experience.

Source: Beverly Park Woolf, University of Massachusetts







Source: Institute for Defense Analyses

Advanced systems will be able to field voiced questions using natural language recognition and artificial intelligence that parses speech for words pertaining to the subject. "These agents are very brittle and very narrow right now," Regian acknowledges. "If you asked Steve how to tie your shoes, he wouldn't have a clue."

Dexter Fletcher is senior research staffer at the Institute for Defense Analyses, a federally funded research and development center that provides research and policy analyses to the secretary of defense. Fletcher acknowledges that DOD has spent a significant portion of its training R&D budget on CBT and ITS technology dating back to the late 1960s. ITS has long been seen as crucial for the military, he says, because it spends some 6 percent of its annual defense budget on formal training courses. Fletcher explains that harnessing first CBT, then ITS is part of DOD's strategy to provide quality-validated training to a geographically dispersed audience on ever-tighter budgets.

Though earlier DOD development of ITS relied on proprietary hardware and software, much of the recent work has been conducted using standard PCs, commercial authoring packages, and private-sector voice technology. ITS technology and other DOD research are wending their way from DOD's R&D labs to the private sector—and vice versa—through academic and private-sector channels. "The magnitude of that back-and-forth flow is more than many people realize," Fletcher notes.

Fletcher, who has been researching ITS and other training technologies for more than 20 years, agrees that ITS will achieve its full potential in the next decade. "Natural language has been the sticking point, but we're seeing major progress in that area—and solving that area will solve lots of other problems. We need something pretty close to 100 percent speech recognition, and suddenly today we have off-the-shelf systems that achieve 90 percent or better recognition." The rate at which the recognition gap has been closing in just the past three years has been remarkable, he adds.

"We tend to use old metaphors in describing new technologies—for example, the horseless carriage and the wireless," says Fletcher. "I think when we talk about intelligent tutoring, we're using a metaphor that we'll eventually see is equally primitive. That's why I want to be alive 20 years from now."

Learning objects. In what some training software developers describe as the Holy Grail of computer-based training, technology pioneers envision a future in which learning content takes the form of independent, reusable software objects. These bite-sized components of learning,

called learning objects, could be used in combination with one another to provide any and all manner of CBT (also IBT and ITS), customized to a learner's needs and then rearranged for another training purpose.

By making learning content granular by converting it into learning objects, training providers can quickly compile CBT for various training initiatives, then reuse the objects for widely different training needs without the need to program from scratch. More precisely, a reservoir of learning objects contained in a knowledge database can spring into action based on defined learning objectives and instructional design parameters.

The shift to object-based learning content, still nascent, represents the final segment of the transition from custom training delivery to mass customization of training, proponents say. The concept, dependent on new and emerging capabilities in software programming, database applications, and instructional design, would be as radical a shift in training delivery as the difference between classroom instruction and CBT.

"It has a huge potential impact, when you consider the ramifications of being able to present any content in a common format," says Phillip Dodds, a multimedia expert who provides consulting services to the federal government on learning objects and other technologies. With true object-based learning, "the construction of learning libraries becomes feasible, and you can really begin to build an economy around learning objects that can be used to build and repurpose training," he says.

Database systems developer Oracle Corporation recently partnered with multimedia CBT provider Macromedia to forge inroads in object-based learning through its recently formed Oracle Learning Architecture Group. Motorola University, which provides training worldwide to Motorola's manufacturing facilities and other locations, is pursuing its own strategy toward learning objects (see the sidebar on page 69). And the White House Office of Science and Technology Policy, together with the U.S. Department of Defense, is striving to coordinate research and development of object-based learning through its Advanced Distributed Learning initiative, a public-private research consortium.

The highly technical issues surrounding efforts to develop object-based approaches to learning are further confused by a lack of definitions or standards on what constitutes a learning object. Interpretations of learning object systems represent a spectrum of capabilities that range from simple rules-based systems that break CBT content into reusable chunks to a long-range purist definition that further granularizes content and relies on software to sift an object library in building CBT.

"The acid test for true object-oriented content is whether or not the system calls for use of an object-request broker—essentially a computer server that uses standardized protocols that identify and deliver objects based on a defined training need," says Dodds of differing approaches to learning objects. The federal government's ADL initiative is evidence of the long-range approach. Object-based systems already in use are incremental steps in that direction, says Dodds.

The ADL initiative, launched in November 1997, seeks synergy from the Defense Department's need to lower training costs and the private sector's growing interest in object-based

Motorola's Learning Objects Initiative

Motorola University, Motorola's training arm, has embarked on an ambitious development effort to create an object-based learning library for its worldwide training programs. The program, launched in mid 1996, is among the first to attempt to put object-based learning into practice on a global scale.

"It's a four-tiered approach," says Christine Good, director of learning technologies for the Schaumburg, Illinois-headquartered Motorola U. "First comes the network infrastructure on which to build the system, and we now have 20 servers worldwide through which to distribute the training."

The next two components—an object-oriented database that will store a library of learning objects for everything from technical training courses to management education and a design template to create online learning using objects stored in the database—are currently under development, says Good. Testing of those components will likely begin later this year. The final tier, including refinement of an end-user interface and development of a user profiler that will aid in matching content with a learner's needs, is slated to get underway next year.

The system, based on an object-oriented database with a proprietary Java-based authoring tool called Wizard, differs from more long-range learning object approaches such as DOD's ADL initiative in certain key respects. At least in its initial phase, the system is geared to allow Motorola's training developers to piece together CBT content that has been broken down into objects rather than use an automated approach to sifting objects to build a CBT. Training developers are currently learning a methodology for taking existing content and breaking it into reusable objects that are "meta-tagged" with attributes that include not only the content, but also additional tags that define the object's interactivity, the competencies it relates to, and other information.

"What's going to be the key as we move forward will be learning how to use that indexing and meta-tagging information in a manner that doesn't become overly convoluted," says Good. Later generations will rely on the user profiler to automate object selection and allow customized learning tailored for a learner's needs, she adds.

Why wade into an emerging technology that, like any system in today's fast-changing digital realm, entails risks of obsolescence and no guarantee of success? "We're a global organization, and we need to distribute training far and wide," explains Good. "Instead of having every facility create its own training CBT, we need to reduce and standardize what we already have and be able to provide quality and consistency. We believe this approach will allow us to do that."

Source: Motorola University

Voice Recognition in a Wearable EPSS?

A consortium of manufacturers, research institutions, and the U.S. Army's training arm have developed a wearable EPSS system that uses voice recognition to allow technicians hands-free access to technical material while on the job.

The system, a bold combination of miniaturized computer hardware, performance support software, and a voice-activated interface, was developed through a $1.2 million contract from the U.S. Army's Tank Automotive Research Development Engineering Center (TARDEC) and the Defense Advanced Research Projects Agency (DARPA). The system is based on hardware developed by Interactive Solutions, a subsidiary of telecommunications electronics maker Teltronics.

The system is currently being tested by the U.S. Army for use in equipment maintenance, diagnostics, and repair at Army National Guard bases under the name SmartDart.

"If you're working on a diagnostic or repair job, and your hands are getting greasy, and you're trying to access a laptop-based EPSS, it's easy to see that's not a convenient way to access material," says Gary Bosworth, program manager for SmartDart with consortium member Raytheon Systems Co. "This system provides electronic performance support in a manner useful to technicians as they do their jobs."

A voice command-based EPSS, SmartDart displays technical material or instructions on a tiny, head-mounted LCD screen or a small flat-panel display. A heads-up display (like those used in fighter jets and a few luxury car models) that projects video images onto eyeglasses worn by a user is in the works, says Bosworth. A VR-based navigation system lets users navigate through technical documentation and diagnostic and repair instructions as needed via voice commands. Users can query the system on voice command options at any time to help navigate to material they need.

The performance support methodology at the heart of the system comes from consortium member General Motors, which has been working for years to provide a performance support tool easy for technicians to access. The private-sector version of the system, called Mentis, is being tested by service technicians at several GM dealerships.

"The days of a technician pulling up his tool box to the car and using only the knowledge in his head to accomplish his task are over," says John F. Smith, general manager of GM's Cadillac division, regarding GM's decision to support development of the technology. "There's too much to memorize and the level of expertise required exceeds traditional training." If the system meets expectations, GM plans a rollout to its more than 8,000 dealerships worldwide.

learning. "ADL will ensure that a common set of guidelines for this new object-oriented learning environment is developed through active collaboration with the private sector," says Don Johnson, a deputy director of defense training in the office of the secretary of defense. The training software industry's involvement is critical, says Johnson, "because they'll be putting these guidelines into practice in developing object-oriented learning." The consortium has issued initial guidelines for a common ADL framework and plans to begin testing software tools for writing learning objects in the fall of 1998.

Meanwhile, training and performance experts are mapping out a new paradigm for learning based on the concept of reusable learning objects. M. David Merrill, a professor at Utah State University's Instructional Technology Department and director of the ID2 Research Group, an instructional design development organization, has outlined a strategy for parsing learning content into object form (*CBT Solutions*, March/April 1998). The methodology for deconstructing content into consistent object components will become critical as training professionals begin employing object-based training approaches, writes Merrill.

Gloria Gery, a pioneer in conceptualizing electronic performance support methodologies and, more recently, learning objects, speaks of radical shifts needed in how trainers view their roles to accommodate the shift to knowledge conservation of the sort embodied by learning objects. She says, "Training professionals are creators of knowledge through their methods of knowledge acquisition and representation. To date, the use of the content has been through training courses. That must change."

In the brave emerging world of learning objects, knowledge must be stored or accessible independent of its use, explains Gery. "Trainers must be involved in the connection part of things, in linking things into meaningful contexts, or working with developers of search engines to define requirements for locating and linking knowledge. Business and training folks increasingly understand that the capture, storage, connection and reuse of knowledge in all forms will become a strategic and competitive advantage."

"But," says Gery, "it hasn't been operationalized very well yet." That will change as the learning object approach passes from R&D through pilot implementations and into a mature technology, she adds.

Experts generally agree that though learning objects represent a major change in CBT development and delivery, the technology's full promise is more than a couple of years away.

Says Gery, "The cycles for reconceptualizing things like developing and programming software and designing and developing instructional pro-

grams always take longer than we either expect, would like them to, or need them to. To be honest, I don't expect a critical mass to occur for a while."

Voice recognition. If the recent onslaught of media coverage can be believed, voice recognition (VR) technology finally appears ready for mainstream applications. The question now facing the IT community is whether people are ready and willing to unplug their keyboards and talk to their computers.

New desktop PC-based systems that run on the latest generation Pentium chips and incorporate arduously developed VR algorithms have generated a wave of enthusiasm in the media for their recognition accuracy rates of 95 percent or better. The new generation of VR systems also allow more natural speech rather than the word-pause-word requirements of earlier systems, and do so with a vastly shortened training regimen to adapt the system to an individual user's speech style. Vendors claim their products can be installed and operational in less than an hour.

Three such systems, from IBM, Dragon Systems, and Lernout & Hauspie Speech Products, are said by VR experts to have achieved a price-performance ratio that makes them attractive to corporate audiences. The newest version of IBM's much-publicized system, ViaVoice, has a vocabulary capability of 128,000 words, including room for 64,000 user-added words to tailor the application to a particular need. The upgraded system, released in June 1998, also features some natural language capabilities—the ability to understand and act on statements and commands by inferring their meaning through artificial intelligence.

"This technology has migrated from a science project to a business solution," said Bruce Dougherty, vice president of sales for Nuance Communications, in a January 1998 article trumpeting VR in *Information Week*. "We've seen a real change in the way people are treating it in the last six months," he added.

The *Information Week* article also cites growth projections from consultancy Voice Information Associates that predict an increase in VR-related sales from $245 million in 1997 to $335 million in 1998—and surging to $810 million by 2001. The technology is growing fastest in telecommunications environments, including call centers harnessing VR to route calls or answer basic information automatically.

Training and performance support applications that use VR to free learners from using a keyboard have been a development priority for training technology developers in the industrial and military technical training arenas. VR is considered an adjunct or enabling technology to portable EPSS and ITS systems and until recently hampered initiatives in those areas with unacceptably low recognition accuracy rates. "We've been to hell and back on voice technology," says one developer of ITS technology that makes use of VR.

New VR capabilities are breathing life into applications, including a Defense Department ITS development initiative and a wearable EPSS developed through a public-private consortium (see the box on page 70).

The technology promises new techniques in language tutoring. One such tutoring system under development at Raytheon Systems Company combines voice recognition and synthesized speech capabilities to tutor students in a foreign language. The PC-based system, Rave, is aimed at multinational companies that need to bring workers up to speed quickly on new languages. Developed using ISD principles that emphasize frequent student interaction, the system is currently in the testing phase.

Still unclear, however, is the extent to which new-generation VR is or will be adopted in the CBT arena, either as a tool to be harnessed by multimedia authoring applications or as a feature in off-the-shelf CBT. The largest provider of off-the-shelf multimedia CBT, Dublin, Ireland-based CBT Group PLC, says it has no current plans to incorporate VR into its line of CBT products. But a company-sponsored user conference in late spring found growing interest in audio capabilities, says CBT spokesperson Cindy McCaffrey.

Asymetrix Learning Systems, a dominant maker of multimedia authoring tools for CBT, says the newest version of those products will include plug-in support for VR that will allow its applications to incorporate VR engines used in IBM and other vendor VR products. But Asymetrix marketing director Raine Bergstrom says the company hasn't yet felt an uptick in demand for VR capabilities in its applications.

"Everyone seems to think its a great idea, but as far as I can tell, no one seems to be rolling out voice applications for CBT," says Bergstrom, adding that he was impressed with the IBM technology at a recent product demonstration he attended. "I think it's a technology that's ready for people to start experimenting with, and everyone thinks that eventually you'll be talking to your computer and it'll be talking back, but I'm sure there'll be many iterations along the way."

Where supply meets demand

Consolidation of suppliers.

The training industry is in the midst of a heated burst of consolidation characterized by mergers, acquisitions, co-development agreements, partnerships, and a host of other joint ventures. At least three forces are pushing training supplier companies toward consolidation. Their clients are searching for cheaper and

more efficient training, and that often means buying it outside the company to help lower fixed costs.

General Motors, for example, has major contracts with more than 100 outside training vendors. About 80 percent of companies outsource some part of their training and the more they buy, the more they say they want to deal with fewer vendors. They also seek vendors that have broad global capability. These customer preferences, especially from large companies, are driving many vendors into each other's arms in the hope of gaining lucrative corporate contracts. In just such a move, Wilson Learning Worldwide recently acquired Transnational Strategies to increase its global capability.

There is also growing pressure on training suppliers to speed up their use of technology to deliver and improve training. But the technology is expensive and often risky, especially for small vendors. Those that team up can share the costs of R&D and maybe shorten the search for the right application.

About three years ago, the training supplier industry began to catch the interest of Wall Street. Investment banks and venture capitalists, eager to use the cash they were amassing in a healthy bull market, saw how outsourcing was improving the market for training. They also saw the huge demand for technical workers and the small number of institutions that could train them. And they saw that the training industry was fragmented and cash-poor—a tempting investment opportunity. Investment firms that had never tracked training companies, except as a small part of the education industry, opened specialized units to build business with training companies. Merrill Lynch is the latest of a number of large investment firms to start a group dedicated solely to the training market.

One outcome of Wall Street's interest has been a rise in public offerings of training companies. Since 1995, more than a dozen companies have gone public. Most of the public training companies to date concentrate on information technology education and training services, a market that is predicted to grow to $7.4 billion by 2001. The first public offering of a soft-skills company occurred in 1998. Provant, a package of seven companies assembled by a successful consolidation entrepreneur, Paul Verrochi, and headed by training veteran Jack Zenger, went public last April. Deloite Touche is said to be assembling a group of companies under the name Frontline, with the intention of taking them public later this year.

The training industry has also begun to attract celebrity investors. Michael Milken and Oracle's Larry Ellison have each invested several hundred million in a holding company called Knowledge Universe. Its training division is headed by former Mattel toy executive, Thomas Kalinske.

What does the future hold? The rigor of the marketplace and the scrutiny of investors will make some training companies better businesses; it may also improve the quality of training products and services. And it will provide capital to help build a technology infrastructure for training. While it lasts, the momentum of the market will attract even more capital. But how long will it last?

Some foresee Wall Street's love affair with training ending when the economy takes its next serious downturn. Companies will rush to cut their training budgets, they warn, just as they've done in the past. Outsourcing could dry up, a prominent public training company could fail, and investors would quickly move on.

Long-term observers of the training market say that in hard economic times, individuals rather than corporations do the buying, and the business stays healthy. A tight fiscal climate appears to prompt employees to seek training, especially technology training, at their own expense.

Consolidation in an industry does not guarantee success. Acquisitions and IPOs are simply transactions. The real test comes during the months and years that follow. Combining a number of small

Implications of the Digital Revolution

The Internet, intelligent tutoring systems, learning objects, and voice recognition—all part and parcel of the ongoing digital revolution. Both together and separately they are forever changing work and learning. Old jobs are disappearing quickly. New jobs are appearing even more quickly. Retraining has never been more important to the well being of organizations and the people in them. At the same time, the rapid pace of change makes it more difficult than ever to find the time for learning new skills to replace those that are becoming obsolete at an ever-increasing rate.

The digital revolution, which has caused the skills gap, is also providing the tools to solve it. The emerging learning technologies that are described here will further blur the lines between work and learning. Increasingly the two will occur together. But they will happen best—and most profitably—in organizations that are conscious and focused on making this happen.

This will require much of practitioners of workplace learning. They too must retool themselves to capitalize on the opportunities and avoid the pitfalls inherent in the unfolding revolution at work. Although classroom training will remain a necessary vehicle for creating learning, it will increasingly be augmented with, and in some cases replaced by, electronic means of learning. This suggests that the best strategy to pursue is to embrace rather than resist this evolution and to develop the technology literacy and skills required by it.

training companies into one large one doesn't necessarily translate into better performance. Not all consolidated offerings will be equally attractive to buyers. A company might be willing to buy consolidated back-room services such as registration, fee collection, and so forth, and it might be willing to lease course developers. But would it lease a chief learning officer or turn training of proprietary methods over to an outside vendor? Probably not.

Soft-skills training is a challenge for Wall Street, say some industry insiders. It's hard to explain to investors. Its methods can seem mysterious, and its practitioners have a reputation for being huggers rather than the hand-shakers that Wall Street understands. Some analysts fear that training companies built around stars may resist efforts by investors to cookie-cutter them. They point to the star mentality among physicians that prevented investors from imposing professional management systems on the health care companies in which they invested.

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The emergence of ALX: America's Learning eXchange

America's learning xchange offers one way to more easily access this consolidating market. As continuous learning becomes more central to individuals' and organizations' economic success, the marketplace for adult learning takes on ever greater importance, as evidenced by Wall Street's emerging interest in it. Facilitating the efficient operation of this market is in the interest of the public good, but not in the interest of any private entity to finance. And so the U.S. Department of Labor has been working to remedy this situation by creating a virtual marketplace where the demanders of workplace learning (both individuals and organizations) can meet in cyberspace with the suppliers (suppliers, community colleges, universities). Although the creation of this virtual marketplace was still under development as this article went to press, it appears to hold great promise for all the stakeholders.

According to the Department of Labor, here's what you will be able to do with America's Learning eXchange when it is fully functional:

Employers will be able to identify, describe, and meet training and education needs as well as raise the skill level of their workforce. Individual learners will be able to keep up with increasing demands for higher skills and easily access thousands of training and education opportunities that can be searched by location, provider, and type of training.

Training and education providers will be able to

- ❑ post their products and services easily
- ❑ attract new customers through this huge virtual marketplace
- ❑ respond to specific training and education needs
- ❑ reduce development costs

Implications of America's Learning eXchange (ALX)

The Department of Labor has experienced phenomenal success with America's Job Bank, a virtual marketplace where employers and job seekers can find each other in cyberspace. The marketplace for workplace learning will be similarly transformed if DOL's vision of creating a well-trafficked virtual marketplace for the buyers and sellers of education and training enjoys comparable success. The creation of a viable virtual marketplace could prove to be a powerful tool for both sides of the market and will undoubtedly serve to continue the evolution of workplace learning from a craft to an industry. As with any other powerful new tools that become available, those professionals who quickly learn to use that tool to their advantage will stand to gain the most from it.

Implications of Consolidation

No matter how long the consolidation lasts, it will produce growth and change. Capital and consolidated R&D will permit companies to find and apply technology they couldn't afford on their own. Electronic distribution channels will probably burgeon and open up many new business opportunities. But for the present, the demand for training companies in which to invest is outstripping the supply of suitable targets.

Training companies can help close the technical skills gap by cutting the fixed costs of training or by providing global training capability. To those will belong the spoils of a hot industry in a bull market.

Wall Street scrutiny has brought business discipline to many training companies, along with deep pressure to perform every quarter. Investors value companies with consistent growth, exclusive contracts with key clients, and a strong product line.

- ❑ be a part of the largest organized marketplace for training and education.

ALX will feature

- ❑ a user-friendly interface that links to databases on education and training programs and to courses, training providers, and consumer services
- ❑ an easily accessible interface for providers to list products and services
- ❑ a seamless link to America's Career Kit, a comprehensive Web-based resource that offers the opportunity to post job listings (America's Job Bank) and resumes (America's Talent Bank), and to search occupational information (America's Career InfoNet)
- ❑ the ability to search for short-term courses and degree and certificate programs
- ❑ information you need to know about licensing, accreditation, and certification
- ❑ a means to identify skills for the occupation you want and the courses or programs that will help you get them.

If that sounds like a delusional cyberspace dream, consider this: America's Job Bank, which will be linked to ALX, currently has more than 750,000 job openings posted and receives 13 to 15 million hits a week. Check it out at www.alx.org.

So, what do these trends mean for you?

Be nimble: The marketplace for workplace learning is in a state of great transition. It is a time of great

opportunity for those who are deft, agile, and forward-looking and a time of peril for those who are none of those.

Ride the wave: Opportunities are many and can be seized by those who look forward. Looking backwards is dangerous in turbulent water.

Think expansively: You are at the right place at the right time. Learning and performance improvements are more important than ever, both to individuals and organizations. The places where your talents could be put to good use are limited only by your imagination.

Become (or remain) technologically literate: The future belongs to the nerds and to those who can interface with them.

Don't be shy: There is an increasing amount of hard evidence that your work is vital to performance and profitability. Marshall the facts and use them to argue your case.

Stay abreast of trends: Though you probably still won't have a crystal ball, keeping an eye on major trends will help you chart your future.

With that in mind, ASTD has compiled the following In/Out list for the new millennium (we couldn't wait for another year to publish it). Some of it is fun; some of it is serious. But we hope that all of it will be helpful, even if it only makes you laugh. ❑

WHAT'S IN	WHAT'S OUT
Learning Objects	Course Materials
Knowledge	Information
Self-Directed Learning	Didactic Teaching
ROE (return-on-expectation)	ROI (return-on -investment)
Work	Team Building
Co-opetition	Competition
Work	Meetings
Scenario Learning	Lecture
Work	Empowerment
Internet Courses	CD-ROM Courses
360-Degree Feedback	Annual Performance Reviews
Adventure Sports	Marathons
Palmtops	Laptops
Casual Week	Casual Fridays
Emotional Intelligence (EQ)	IQ
Nerds	Jocks
Training IPOs	Mom & Pop training companies
File Attachments	Course Handouts

Laurie Bassi *is vice president for research at the American Society for Training & Development,* Scott Cheney *is director of ASTD's Benchmarking Forum, and* Eleesha Lewis *is research officer for the Benchmarking Forum.* *They extend their thanks to Tom Barron, Patricia Galagan, Michelle Maher, Ethan Sanders, Mark Van Buren, and Stacey Wagner for their contributions to this article.*

World Views

Although the trends discussed in this article generally hold true around the world, there are many exciting developments in training, development, and performance improvement to be found in a number of regions. What follows are brief glimpses of trends in three regions of the world where the forces of globalization have begun to draw out previously secluded economies and, consequently, have affected the role and status of training and development. The three regions we look at here are South America, Eastern Europe, and Australia and New Zealand. The insights come from leading authorities in each region.

South America—represented by Brazil

Brazil is South America's largest country as well as its largest economy and, as such, provides a rich (albeit limited) view into regional economic and development trends. In order to understand the new context of training and development in Brazil, we need to understand the recent past—a past characterized by extraordinary inflation (up to 80 percent per month) and government intervention to protect companies from international competition. There was little concern with productivity because companies could earn more money in the financial market without exposure to international competition. Outside of a few exceptions, there was little investment in production and even less in human resources.

Since the early 1990s, an opening process has increasingly exposed Brazil's industries to international competition. Many companies, eager to become more competitive, adopted fashionable processes such as reengineering and downsizing, resulting in a large number of people losing their jobs, which compounded economic conditions and sacrificed precious skills and knowledge within companies. Subsequent economic stabilization, started in1994, reduced inflation to 4.8 percent in 1997.

The twin factors of globalization and economic stabilization influenced Brazilian companies to invest in developing their human resources, including both management and blue-collar staff. At the same time, factory-level employees began to receive formal education, significant because a large number of these employees were only marginally literate.

That is not to say that Brazil doesn't have organizations that understand the value of employee development. A recent survey, done to find the best companies (either national or multinational) to work for in Brazil identified 30 that, on average, provide 110 hours of training per employee each year. According to Saratoga Institute of São Paulo, the 500 largest companies in Brazil invested $650 million in training in 1997, an increase of 12 percent compared to 1996.

Additional emerging trends in Brazil include the creation of corporate universities through the partnership between universities and business companies. This trend tries to align people's development needs with a larger approach connected with general education.

Another trend is that Brazilian workers, mainly managers and clerical personnel, are discovering that they are responsible for their lives and are beginning to invest in their own careers. Entrepreneurship is becoming good currency.

In addition, companies or employees are increasingly becoming spiritual, searching for a larger meaning to their jobs and lives.

Contributed by Humberto Cesar Costa de Souza, director of GDE - Grupo de Desenvolvimento Empresarial, Curitiba-Puerto Rico.

Eastern Europe—represented by Hungary

Hungary, like many other countries in Eastern Europe, has experienced a wild ride in the rough and tumble of market economics during the past decade. Following free elections in 1990 and market reforms that led to widespread privatization, Hungary has made considerable progress toward integration with countries of the European Union (EU). Macro economic and political upheavals precipitated major changes in the workplace (in both the private and public sectors). The establishment of the infrastructure required to facilitate the movement of capital, ownership of property, and distribution of goods and services brought with it a need for new skills, knowledge, and attitudes that are taken for granted in the West.

Investment in training during the first half of the decade was largely targeted to the legal, financial, and sales and marketing professions. Business management education was also on the agenda as a plethora of business schools opened their doors during this period. Many of those schools have since closed, leaving the arena to a healthy selection of training providers.

Training and development was not considered a profession prior to the political and economic changes that occurred in the late 1980s and early 1990s. As a consequence, Hungary has had to run very hard to catch up with its Western counterparts.

The fact that local providers were not swamped by international competition is largely attributed to cultural and language barriers.

Despite a healthy and buoyant software development industry that boasts some of the most innovative developers in the world, the Hungarian training industry overall has shown little sign of adopting and using learning technologies. There are some computer-based simulations available, but Web-based learning, video-teleconferencing, and other methods are notable by their complete absence from the Hungarian training and development scene. Although there is a trend towards customized training, the vast majority of training delivered in Hungary is prepackaged. This reflects a combination of weak selling skills and instructional expertise within the Hungarian training industry. It also underlines the fact that needs assessment and training evaluation in Hungary are rudimentary at best.

Whether it is due to restricted budgets or to users who simply prefer to learn on their own, there are as yet remarkably few recognized, dedicated providers of computer skills training in Hungary. Hardware and software distributors appear to be meeting the existing demand. However, as the availability and supply of computer hardware grows, this is certain to change.

Having invested in specific job-skills training in the first half of the 1990s, many organizations now regularly provide soft-skills training in areas such as teamwork. Should this trend continue, it is believed that it will give rise to stronger demand for evaluation of training results. This will be reinforced by a growing worldwide shift from training to performance.

Contributed by Ian McDonald, HRDQ Central Europe Kft., Budapest, Hungary.

Australia and New Zealand

In Australia, one of the most significant initiatives undertaken in recent years is a major national program designed to develop the skills and improve the workplace performance of Australia's 400,000 frontline managers—a program so large in scale that it has the potential to dominate training and development activities over the months ahead. Improving the skills of frontline managers was one of the highest priority recommendations made by the Industry Task Force on Leadership and Management Skills. The task force found that nearly half of the managers currently filling a frontline role had never received any management training. To encourage both individual managers and organizations to participate in the competency-based program, there will be a series of major public launches taking place across Australia during the second half of 1998.

For many years, geographic isolation allowed a more conservative and watchful approach to global trends and developments. Globalization is changing all that. In New Zealand, one of the strongest influences in training and development is the emergence of the National Qualifications Framework. New Zealand adapted the Scottish model for the recognition of qualifications, the development of unit standards as the measurement of levels of achievement, and the recognition of prior learning as an appropriate path toward achievement of recognized and accredited qualifications. So successfully has New Zealand adapted and implemented this model, that it is about to export the model, plus assessors, to South Africa, Southeast Asia, and Eastern Europe.

Other interesting trends in Australia and New Zealand:

- In Australia, formal classroom training will continue as the most common training approach for the foreseeable future. History indicates that Australians like technology and innovation, so an increasingly upward swing in the number of technology-based education and training initiatives can be anticipated. Australia is witnessing a steady growth in multimedia applications. Additionally, cross-functional action learning incorporating real-work projects and assignments will increase, and the restructuring of the workforce will place increasing pressure on the need to multi-skill people.
- In New Zealand, there is greater recognition of the need to retain intellectual capital in the workforce for a greater length of time. One strategy for this is to ask would-be retirees to share their learning and mentor others so to transfer knowledge to the next generation of workers. The potential for current employees to job share or be mentored appears to provide a vital opportunity for learning and workforce improvements.
- In both countries, there is an increasing awareness of the need to measure performance improvement after training, and for line managers to be more involved in the development and implementation of strategically aligned training.

Contributed by Les Pickett, president, ARTDO Asia-Pacific Human Resource Development Organisation, and past president, Australian Institute of Training and Development; and Phillipa Elliott, national president of the New Zealand Association of Training & Development.