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STATE OF THE ART

When Doing Equals Learning

Organizations look for ways to erase the line between training and work, helping to lower costs and increase efficiency as they go

BY TRACY MAYOR

It's been years since CIOs and other managers had the luxury of being able to ignore corporate training. Operations have become more complex, systems more mission-critical, the workforce more volatile and education more expensive. And training has emerged as an upper-level concern in most IS departments. In fact, it's the basis for a \$7.5 billion industry, according to Framingham, Mass., research firm International Data Corp. (IDC).

But even as managers shop among the list of cutting-edge training techniques—from computer-based training to multimedia movies to hypertext help—another group is working just as hard to erase training altogether.

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Are they crazy? Not quite; they're the proponents of Electronic Performance Support Systems (EPSSs). At their most ambitious, performance support systems seek to wipe out the distinction between learning and doing by embedding the user's work requirements into their underlying structure and design interface. "Training and documentation are compensatory for badly designed applications," declares Gloria Gery, the Tolland, Mass., software-design consultant credited with developing and naming EPSS. "If you design around the work process and embed knowledge into the application, far less training is necessary."

The interface and structure of an EPSS program, together with built-in aids such as tip boxes, voice-narrated demos, balloon help and hypertext links, work to answer questions before they're asked. An EPSS shows users clearly and simply how to get more information and lets them control their own access to more in-depth training when and where they need it, all without leaving their workstations.

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Applying these principles to the hotel industry, for example, yields a system that presents reservation takers with a graphical depiction of the hotel floor, including clear, recognizable icons indicating instantly which rooms are kings, doubles or singles, which offer other amenities such as

depth training when and where they need it, all without leaving their workstations.

mini-bars or views and which are booked on any given night. In human resources, performance-support systems, like the one offered by Phred Development Inc. in Breckenridge, Colo., help managers identify conflicts, determine their cause and develop solutions without needing to be formally trained in the Rational Emotive and Gestalt principles that underlie the program. In computer systems circles, an EPSS works as a just-in-time training tool that helps novices learn computers, operating systems and applications by tapping intelligent agents, task-focused computer-based training modules, audio instructions embedded in the software at key points, animation, an expert system and hypertext-linked online help.

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According to IDC figures, technology-delivered training in 1995 will account for 19 percent of the projected \$7.5 billion spent, with EPSSs taking up 7 percent of that figure. "We see it as an emerging technology," says Ellen Julian, IDC senior analyst for IT training and education research services. "EPSS needs a knowledge engine. It takes time and money to build that, but the value is phenomenal."

But orchestrating the involvement of workers from many departments (and often, the development of a completely new approach to business practices) can consume time and resources some companies feel they can't spare. While the most avid proponents argue that EPSS is an all-or-nothing science, many companies have stepped into the void between traditional computer-based training and full-blown EPSS, offering a range of solutions that organizations can use like stepping stones on the path to performance-supported enlightenment

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But for large or visionary companies with a need to train users on mission-critical, process-oriented systems, there often is no turning back after they see the EPSS light. "Large, decentralized and increasingly globalized companies are looking into EPSS," says Alexandra Rand, president of Internal and External Communication Inc., a custom training and performance-support consultancy in Marina del Rey, Calif. "The more heads you have, the more easily a system is cost-justified." Otherwise, early adopters can be technology companies, which Rand says are more likely to understand the benefits of a performance-centered system, and small upstarts that want to use information to get an edge over larger, entrenched competitors.

Cost-justifying even a large system can be relatively easy, Rand says. A properly designed EPSS can reduce the new-employee learning curve by making workers productive almost immediately and offset traditional costs for classroom

training, tech support hotlines and print costs associated with updated documentation. In addition, it can eliminate often-hidden problems such as lost business due to worker incompetencies, productivity disruptions caused by new systems that were introduced to workers in the wrong way, or even the legal risks associated with having poorly trained or poorly supported workers giving out incorrect information.

Does that mean every software application needs customized support? Not quite. Utilities, general-purpose desktop applications and some data-entry or data-retrieval programs don't necessarily need the power and complex programming behind a full-blown EPSS-particularly since those types of programs now include wizards, tutorials and other how-to tools.

On the other hand, says Gery, task-based applications that generate specific outcomes or cognitive conclusions-such as financial, accounting, management, human resources and manufacturing systems-are naturals for EPSS because they require two kinds of training: systems-based instruction (how to use the software) and what she calls domain learning (why one uses the system).

At the crux of Gery's theories is the concept of context break, or how far away from the user's work experience he or she must travel in order to receive assistance. "If it's more than one click away, people won't bother," Gery says. Journeying out of the office for a multiday instructor-led seminar is as far away from work context as possible; calling the help desk, rummaging around bookshelves for documentation or collaring passing co-workers are only slightly less intrusive. Popular help tools such as cue cards, wizards, process maps and tip boxes, which Gery classifies as "extrinsic" support, are much better because they reside in the software, but they still require users to shift gears from a working mode to a querying mode. "If people have to change from doing to learning, they won't do it," she says. "If they get on the help line and have to wait 45 minutes, they'll ask, 'Can I get away with changing the goal instead?'"

Intrinsic support obviates such questions by presenting an interface that answers questions before they're asked and provides clear direction to whatever supporting data users need. "You need to identify the things that people do 80 percent of the time and make those intuitive and easy to use," says Tim Harvey, vice president of information technology at Memphis, Tenn.-based Promus Hotel Corp., which owns the Embassy Suites, Hampton and Homewood chains. Promus's new property-management system, currently nearing the end

of its first year of development and scheduled to roll out in January 1997, is being tailor-made to reduce the firm's systems-related training costs by an aggressive 80 percent.

Simplicity and clarity are paramount design goals for the system. "You need to ask, 'What does the common person know?'" Harvey says. To that end, the Microsoft Windows-based system sports a onscreen calendar-an object universally recognized by workers-that eliminates the need for a "correct" date form; users simply highlight the requested dates on-screen with a pointing device. In addition to reducing training, the calendar allows users to accommodate a wider range of customer requests ("the first weekend in June" as well as "June 6") and reduces data-entry errors. Likewise, where the existing system requires users to type the acronym NXBL for a non-smoking room with a double bed, the new system simply shows the universal no-smoking symbol and the words "double bed." For transactions, the system actually paints credit card logos on-screen, with appropriate number-entry boxes linked to each one.

Performance-support systems don't necessarily need to be written from the ground up-nor do they need to employ the latest in technological wizardry-to be effective. United Services Automobile Association (USAA), a San Antonio insurance and financial services company, has long maintained a legacy IMS system that was originally designed for accounting specialists but is now used by policy-service workers for adding or deleting policy details, checking on status of payments and policies in force, tracking billing and late fees, and other tasks.

Currently, policy reps must sift through several different screens on the legacy system to come up with that information, issuing multiple transaction codes, which they are expected to memorize. The results are long telephone calls, which are inefficient and off-putting to customers, and caused an unacceptably high number of calls referred to accounting specialists.

At the request of the users themselves, USAA undertook writing a performance-centered front end to the system that met the account rep's needs from a single screen. When workers identify the customer, they see that customer's entire status report on a single screen, with alert buttons that call attention to special situations (late payments, service charges and so on). A single button click brings up more-detailed information on any item on the initial screen.

"We designed a solution that would fit their task requirements," says internal systems consultant Art Howe.

"We wanted an interface that aggregates data in a better way, presents in a better way so that it's more easily understood, more easily accessed. We developed three prototype metaphors—a calendar, a bar graph and text—and we thought something other than text would be more intuitive, but the users said text was the simplest to use. We were surprised by that," he says.

USAA is rolling out the new system out in pilot to 60 service representatives in its Great Lakes regional office in September. Howe says usability testing thus far indicates the company should have little problem reaching its goals for the system—a 30 percent reduction in referred calls, and a reduction in the average length of a call by 30 seconds.

If EPSS practitioners agree completely on any one topic, it's that the design process must include input from a wide variety of departments. "Traditionally, IS is measured on how well it produces bug-free, executable code; someone else is expected to take care of training somewhere down the line," Gery says. For an EPSS to work successfully, that mind-set has to change before development even begins. "You have to reconceptualize your application and its goal, and the CIO is pivotal to this process."

Gery ticks off a long list of people who should be involved in development, including designers, knowledge-representation experts (formerly known as trainers or documentation writers), visual artists and, as always, the people who use the current system and will be expected to use its replacement. That may sound like a full house for any single meeting room, but EPSS proponents in the field back up her assertions 100 percent.

Mike Chance, general partner with the Mantissa Group consultancy in Durham, N.C., spent several years developing a wide-ranging, multiplatform performance-support system for a global systems company. Thirty people from eight departments, organized into a team with a democratically appointed leader, were fully involved, with input from others as needed. "The low-level design on an EPSS is very critical to its success," Chance relates. "We learned that no decision could be made without all parties present and in agreement." The group included experts in instructional design, animation, video, online help and other support issues, but "there was no one person who understood all the pieces" as well as the group did as a whole.

And as an absolute never-break rule, customers must be involved from the very beginning, managers say. "Even

though IS has learned you can't design a good system without user involvement, in developing the EPSS, that involvement is more intensive and uniform throughout the process," says USAA's Howe. "Programmers have to think in a different way and they need users by their side helping them think."

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Desktop Options

For the large number of trainers and IT managers not yet sold on Electronic Performance Support Systems (EPSSs), companies offer a wide range of options, some tried and true, others innovative, that help improve technology-delivered training without the business-process reengineering often required by an EPSS.

"For less than \$10,000 in hardware and software, you can capture video vignettes or use a relatively new tool like the Win 95 help engine" to enhance existing applications with built-in or linked tutorials, how-to files or other types of support, according to Mark Minasi, president of Mark Minasi and Co., an Arlington, Va., technical education firm specializing in books, magazine articles and instructor-led learning.

Other companies turn to multimedia authoring tools from companies like Macromedia Inc., which makes Authorware Professional and MacroMind Director; Asymetrix Corp., which markets Toolbook; and Aimtech Corp., which offers IconAuthor. These tools and others like them help companies add sound and graphics to existing applications or develop full-blown standalone computer-based training videos that users can run onscreen without leaving their workstations.

PTS Learning Systems in King of Prussia, Pa., has developed what it claims is a better way to train users on popular and custom desktop applications and on Windows 95. PTS's product, On-Demand Interactive Learning, loads on the network and is accessed within the live application to provide three modes of user-controlled, context-sensitive training: demonstration mode, teacher mode and Lightning Learning mode. If users choose Lightning Learning mode, for example, the software overlays a learning box on top of the live application and performs the procedure in question, with users following behind in the live application with their own cursor. On-Demand Interactive Learning is available now for

Microsoft Windows 95; modules are in development for Microsoft Office for Windows and for products from Lotus Development Corp. and Novell Inc..

Starlight Networks Inc., meanwhile, has teamed up with Sun Microsystems Inc. to offer an end-to-end bundled solution that lets companies deliver networked multimedia to users' desktops. The companies' Training on Demand system comprises Starlight's StarWorks multimedia networking software and courseware, preloaded on a Sun Sparc workstation. The result is full multimedia-enabled video-on-demand delivered to individual users' desktops with only minimal upgrades to the individual client to support multimedia. Courseware is available for a range of desktop applications, including Windows 95, Ami Pro, Excel, WordPerfect, dBASE and OS/2.

Whether organizations grow their own training from scratch, opt to expand on installed systems like Windows 95's help system, adopt a spot solution like those listed above or choose to go the whole nine yards with a complete EPSS, Minasi and other traditionalists insist there is no system that replaces human interaction entirely. "CBTs have been very good for simple skills-based training, but for concepts, or what I call "lightbulb" classes, you need person-to-person interaction. But designing client/server or learning Novell networking are still person-plus-instructor topics."

--Tracy Mayor

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