Are You Ready For Automated Design?

By Diane M. Gayeski

Trainers have the opportunity to automate instructional design with existing computer technology. But taking full advantage of electronic marvels won't come without a little soul searching.

"Achieve the impossible." To trainers who believe instructional design is sacred ground, that might have seemed to be our mission.

A client asked us for a computer program that would let content experts generate training models and job aids without learning instructional design. The right program, our client said, would interview the experts and produce a printed job aid, workbook, computer-based training program, or storyboard for a slide show or videotape.

Impossible? No—it's the future of training.

What about trainers?

For the last decade, trainers have helped employees and clients learn to use automation more effectively, but rarely have trainers brought computers into the instructional design process. Of course, software for word processing, desktop publishing, computer graphics, and CBT authoring has greatly eased the production of training materials. But for most trainers, the design phase remains the most time-consuming and often the most expensive—especially given the hourly rate of experienced instructional designers. And most design staffs cannot even come close to tackling all the small but important content areas.

As a profession, trainers also have managed to convince the world that

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developing and administering instructional and job aids takes expertise in more than just the subject matter. We have held firm to the notion that instructional development is systematic, based on defined rules and procedures underpinned by theory and research.

Keeping instructional development to ourselves has created an information bottleneck in the training department. But if instructional design is a science rather than a black art, it can be "bottled" in an expert system and decentralized.

Instructional design, distilled

Various well-known theorists and developers have done just that: distilled their instructional design systems so that trainers can produce high-quality, standard training solutions by following specific recipes.

Joe Harless, for example, has developed several volumes of performance technology algorithms for his Accomplishment-Based Curriculum Development system. David Merill has computerized much of his Component Display Theory; like an expert system, it can recommend instructional strategies. IBM has developed an expert system to help select appropriate delivery mechanisms for in-house training. For its own staff, Arthur Andersen has System/e, a comprehensive guide to instructional development.

Of course, computers are commonplace in training design. But the future of automated training lies beyond basic programs for word processing, desktop publishing, graphics, and even CBT authoring. Design "intelligence" is already creeping into production software. Some desktop publishing systems come with predesigned layouts for books, newsletters, and technical

manuals. A CBT authoring system being developed has built-in design templates as well as "help" screens and a developers' guide, so that CBT novices can avoid some of the glaring mistakes many beginners make.

Computer use in training is segmented; training departments may use one or more programs for discrete tasks, but do not integrate their electronic capabilities. Future software systems for training will take a more comprehensive approach. They will help supply expertise to the istructional developer, while offering the convenient editing and text/graphics manipulation of current software.

Consider the following automated training system:

■ Interviewing software systematically debriefs content experts. Depending on the input, an expert system recommends instructional strategies and media.

■ Electronic job aids cover the instructional design procedures now contained in volumes of written manuals. Using such features as hypertext designs and pull-down "help" menus, developers can get advice and definitions as needed.

■ Content is gathered from on-line databases.

■ Using word-processing and computer-graphics tools, developers build on already-defined program content and training strategies.

■ Graphic input from scanners, video, or slides is incorporated into an electronic database.

■ CBT authoring systems, storyboard software, and desktop publishing programs transform the rough input and produce a final product electronically or in print.

The tools to do that—all PC-based— 61

already exist. One example is the Content Expert Interviewer. CEI allows a subject-matter expert to respond on-screen to an interview similar to one an instructional designer would conduct. The program then sorts the input to list performance problems, teaching points, common misconceptions, mastery questions, prerequisite knowledge, and possible training strategies. The software also creates standard ASCII code, which can be used in a word-processing package to draft scripts and manuals. Desktop publishing produces camera-ready text, and accompanying visuals may come from graphics software, scanned-in artwork, or video. Other options include using the text in an interactive video or CBT program.

Changing the training game

We haven't managed to put a trainer in a box or to create the one-step, push-button instructional development machine, but many tools and techniques promise to make training more effective and efficient.

Greater automation of the training function has wide-ranging implications. Creating the needed software will require standard formulas that capture our understanding of training strategies and media design. Then, expertise in training development and instructional design will be diffused within the organization through "intelligent" tools, and more content experts themselves will be able to create well-designed materials.

Training media will merge, reducing the time and cost of developing training products. Automation will unite word processing and computer and paper-based graphics; video and photographic images; and electronic display and print. Newer technologies, such as CBT and interactive video, will then have a good chance at succeeding, despite present objections of high cost and lack of design expertise.

Those developments raise serious questions for trainers:
■ What will distinguish training as a profession if anyone can develop effective programs through "canned" expertise?
■ Will automation diminish the trainer's role or reduce the drudgery of certain tasks?
■ Will people take advantage of expert software or ignore it as they do current paper-based instructional design systems? Or will more easily accessed job aids encourage people to apply the design research conducted in the last 20 years?
■ How will trainers select and maintain integrated systems relevant to their work when the technology changes so rapidly?

Despite the importance of those unanswered questions, strong motives for automating will persist. Systems based on personal computers, off-the-shelf software, and custom programs built around organizations' individual training systems can be created for much less than the cost of producing videotapes or sending people to off-site seminars. With many training departments required to do more with less and to get new trainers on-line quickly, we cannot overlook opportunities to apply intelligent automation in instructional development.