

JOE C. RADER

Head, University Archives  
University of Tennessee Libraries  
Knoxville, Tennessee,

## The Development of Computer-Based Training in a Systematic Staff Training Program

### ABSTRACT

In 1990, the Libraries of the University of Tennessee, Knoxville, successfully developed a seven-unit program of computer-based training (CBT) for library staff under a Department of Education grant. The program's development and its implementation mark a first in libraries for systematic CBT for staff. Named *New Horizons in Library Training*, the program has been distributed widely to other libraries. Although expensive, this pioneering work has promise for further development and refinement as a staff training tool and for joint utility with computer-based programs of user instruction.

### BACKGROUND

Since 1990, a program of computer-based training (CBT) for library staff, developed using HyperCard at the University of Tennessee, Knoxville (UTK), has received wide publicity in the library press and has been acquired by more than 75 institutions that are known. Others who are not known may have downloaded the files via File Transfer Protocol (FTP) over the Internet since the entire program has been available to the world on the UTK Libraries' VAX (address: utklib.utk.edu or 128.169.202.177). To date, 211 people have made direct inquiries about the program by electronic mail, phone, or other means to the CBT project directors, Pauline S. Bayne and Joe C. Rader. It

is named *New Horizons in Library Training: Computer-Based Training for Library Staff*, and the following is a discussion of the program, the process of its development, its reception and implementation, and some conclusions about the experience.

Since HyperCard became available to the public in 1987, librarians of all degrees and stations have been exploring its use in the construction of interactive, computer-based training for library users. The result has been many programs with widely divergent degrees of sophistication, thoroughness, and implementation success. Some have been one-librarian attempts to create something helpful for users of the reference room. Others have been team efforts with significant institutional support that were designed to be implemented in a programmatic way. Project F.O.R.E. (or Focus on Research and Evaluation) from Utah State University is a good example of this effort (Piette & Smith, 1990). And there is the multibrary joint effort called HyperCard Library Instruction Project (HLIP) (Talan, 1992); that product is to be available in the fall of 1992. All these projects have the common goal of using technology to solve a library challenge of human interaction that is both labor intensive, from an administrative perspective, and highly repetitive, from the individual staff member's perspective. Computer software packages like HyperCard (and there are several available now) have placed into librarians' hands the capability of creating self-paced, interactive CBT without requiring the expensive services of programmers, who must write reams of code to create even simple forms of interactive CBT as had been the case in the past.

### THE TENNESSEE CBT PROJECT

In general terms, the project at UTK had as a primary goal the application of technology to help solve a library challenge: systematic training of library staff. Despite the widespread enthusiasm for HyperCard to create library instruction for users, the UTK developers found no evidence in the literature of the use of CBT in libraries for staff training (other than a few reports of using some application-specific programs to teach certain computer skills like DOS or a particular software like WordPerfect). Yet, among librarians and in the literature, one encounters much discussion of the training needs and skill requirements for all levels of library employees.

In reality, the research library of today presents a large, highly complex environment in which the information needs of users are met increasingly through technology-mediated processes. The people who work in this environment must be trained and retrained constantly, but this is rarely done systematically—or, if it is, it is not reported.

Often the training of the new employee is left totally to the supervisor in the employee's department with little if any coordination from unit to unit—except perhaps for a general welcome and orientation to the institution given to groups of new employees. Where training does occur, it is collectively expensive in staff time although staff may be largely unaware of its cost librarywide. A Carnegie Foundation report has suggested that industrial corporations spend \$40 billion per year in the training of employees. No one knows what libraries spend.

Into this environment stepped the team of librarians at UTK to see if they could develop a partial remedy to this management problem. They proposed CBT with these characteristics:

- the program would be accepted by staff and administration;
- the program would ensure instruction for all library employees (student, part-time, full-time) in fundamental, basic library operations;
- the materials would be machine-based (no need for human intervention after an introduction);
- the machines would track trainees' progress;
- the materials would be transferable with little effort from institution to institution.

It was an ambitious proposal and required support beyond that which a single institution could readily afford. Backing came from the Department of Education in a \$67,000 grant and, later, from Apple Computer, Inc., in training, encouragement, and additional equipment. The project also required much support from the University of Tennessee Libraries as well since this major project drew people away from their normal positions to work on various aspects of the project, officially and unofficially, for 15 months. The official "Final Performance Report" to the Department of Education, available as an ERIC document, contains details of the activities of the project as well as appendices of forms, surveys, and other documents used (Bayne & Rader, 1991).

One of the first matters to be decided was who was to be responsible for developing the instructional units. The grant specified a team of seven librarians plus two as directors. Team members were solicited by the codirectors on the basis of instructional experience or interest in HyperCard applications. To the extent possible, the members were chosen also to represent a cross section of the libraries. This prevented the burdening of any one area too heavily by having multiple staff members away from their normally assigned duties, and it gave a widespread base of interested parties who, it was hoped, would "infect" others in their areas with their enthusiasm for the project. Later, team members were paired with codirectors to create pairs of coauthors, each of which was responsible for a specific instructional unit. (For those

doing arithmetic on the division of labor among the team, one topic had three persons assigned to it, and all the others had two each.)

### Topic Selection

Another thing to be decided early on was which topics out of all those that might be addressed would be treated in the CBT. Two surveys, one local and one national, gave guidance. A quick and easy survey of library supervisors and department heads at the UTK Libraries gave the developers their initial guidance on subject matter to consider for inclusion in the program. A more extensive questionnaire was mailed to all directors or personnel officers of the 119 members of the Association of Research Libraries in late autumn of 1989. An interesting outcome was that high priority topics from the national survey were among those that had been ranked high in the local survey also. At the top were the following:

1. Service Attitudes and Behaviors
2. Orientation to the Academic Library
3. Access to Journal Literature
4. Integrated Online Systems for Libraries
5. Introduction to Reference Work
6. Resource Sharing
7. Acquiring and Processing Library Materials
8. Preservation of Library Materials
9. Introduction to Government Documents

The list was modified somewhat. Number 1 on service attitudes was omitted because no one could figure out how to develop an effective unit with the medium that was to be used. Orientation was to be included but with institution-specific information; it was thought that to be effective this unit would have to contain local, highly specific information. It was developed for two reasons: it would be used at UTK, but it also could serve as a model for other institutions. All other units were to be designed to present generic information so that they could be readily used in different libraries. Number 4 on the list, "Integrated Online Systems for Libraries," became "Computers in Libraries." Six new units—besides a revamped prototype unit introducing the Library of Congress classification system—were the limit called for in the grant; therefore, the cutoff dropped preservation and government documents for purposes of the project.

Besides gathering information on topics to be developed, the surveys also served to plant initial expectations locally—and nationally to some

degree—for a CBT staff training product “one fine day.” It was a stimulus to people in libraries to think about the possibility of such, at the very least.

### **Preliminary Decisions**

At the outset, considerable analysis led to the decision to use HyperCard and the Macintosh platform. For one thing, there were not many options in terms of easily accessible hypertext software at the time, and HyperCard was a relatively simple and highly intuitive tool in the hands of a Macintosh user of only moderate expertise. A second consideration was the cost of HyperCard in 1989: free and bundled with new Macintoshes or \$49 if purchased otherwise. And, finally, the Macintosh, plain and simple, was thought to be the most widespread kind of computer found in libraries after the IBM and clone PCs.

While waiting for equipment and software, the CBT development team had much to do. The planning of the content of each unit began. Each pair of coauthors had to determine exactly what information was to be conveyed, and, even more difficult, what was the most economical way to convey that information. To get a group of logocentric people to use as few words as possible in instruction without sacrificing important information was a formidable task. This was necessary, however, for CBT to work effectively; it is not a mechanism that allows wordy presentation if it is to hold the trainee's interest.

Considerable training was necessary for each team member to be brought up to speed in the use of HyperCard for development and in other areas. A two-day intensive HyperCard tutorial taught by Apple representatives brought the entire team up to the level of doing simple programming using HyperTalk. A seminar on basic graphic design and another on the fundamentals of instructional design introduced the team members to concepts and areas for further individual reading and exploration. Resource books on HyperCard were made available, and such standard texts as Gagné, Briggs, and Wager's (1988) *Principles of Instructional Design* and Dick and Carey's (1985) *The Systematic Design of Instruction* were recommended for further self-education.

### **Development Activities**

When their Macintoshes were available, team members began the design of “storyboard” stacks that were forerunners of the actual stacks that would be developed. They created “draft” narration screen-by-screen. Then reinforcing or presentation ideas for each segment of text were noted on the screen on which the text was recorded: graphics, sound resources, special effects, animation, or other production ideas.

In this way, an outline of content was being created, and the outline could mimic the actual features of the ultimate presentation using, for instance, such devices as loops or other hypertextual connections. This early conceptualization of the instruction to be presented and the metaphors and devices of presentation to be used was an important step on the road to production.

Although team members were topically assigned, the team met as a group at least once each month for the duration of the project to review the work done by the pairs of coauthors and to decide matters of common concern such as the design of screen templates, fonts to be used, and other questions that affected the consistency of all units of the series. Team members circulated for comment drafts of texts and other plans—in print and in HyperCard formats—so that reciprocal reviewing could take place as work was being done. This meant that any creation went through a kind of “pretest” since it was reviewed by seven other team members before the first review by anyone not a part of the team.

### Evaluation Techniques

Evaluation of the CBT products created was extensive and based on the Dick and Carey (1985) model for the design of instruction. First, two or three selected library employees viewed a unit in the presence of one of the developers of the unit. Discussion between the reviewer and the developer gave important feedback to the author, who was able also to observe the interaction of reviewer and material. Authors made many notes for consideration when revising the instruction. Next what was termed an “expert review” occurred. All nine team members reviewed each unit completely and made specific comments and notes in a screen-by-screen fashion. The coauthor teams then revised their units based on the information gathered from these evaluation processes.

A second phase of evaluation occurred when 13 library employees who had not seen the materials reviewed the material. Each examined all units and made comments on each unit on prepared forms. Again coauthors made revisions in either instructional content or presentation. Among the changes made were adjustments to drop the average length of time to go through a unit from a range of 30 to 50 minutes to 15 to 45 minutes. If trainees are truly learning from the concentrated instruction presented in CBT, 45 minutes is a long and tiring time for one sitting.

Late in the year in 1990, the CBT program was ready for one last “field test.” In this phase, library supervisors and new employees went

through the instruction under circumstances that anticipated those in effect during full future implementation. A total of 49 persons participated in this evaluation.

After final adjustments and minor changes, the CBT program was ready for implementation at the UTK Libraries. The main library had a training room equipped with six Macintoshes, and each branch library had a Macintosh dedicated to training purposes. Since January 1, 1991, *New Horizons in Library Training* has been a part of the training that all new employees receive. For the first time, perhaps in the history of the institution, there is a program that ensures that all employees receive the same basic core of instruction about the libraries, their roles, and major functions.

### **Structure of Instruction**

Some specific information about the structure of the CBT instruction might be helpful in understanding both the scope of the program as it was initiated and how it worked for trainees. The developers had started with the premise that each trainee would be issued his or her personal "trainee diskette" that would both control progress through the program according to a predetermined route and would be the vehicle by which data on the trainee's progress were recorded. This information would be used by supervisors to follow a trainee's progress through the program and would be used for analysis and evaluation of the program itself. Trainees were to pick up their diskettes before they started a unit and turn them in again when finished.

Analysis of this procedure soon made it evident that another system would have to be devised. Keeping up with scores of trainees and their diskettes would have taken enormous effort. Moreover, the transferring of files from the individual trainee diskettes to administrative machines, combining and manipulating the data, and then getting appropriate information to supervisors in departments throughout the libraries would have been an even larger personnel administration burden.

At this point, a sound educational principle that had guided the planning of instruction in the individual units also provided the inspiration for designing trainee access to the program: namely, "Give the learner as much choice as possible while learning a set of materials." Or put another way, "People have a better attitude toward learning and, therefore, learn more when they can feel that they are in control." The access solution was simply to provide a menu that offered buttons for all topical units. Trainees would choose options and have the responsibility for proceeding through the program as they and their supervisors determined what was best for them in their particular situations. Central administrative control, generally resented by

employees, was diminished by shifting the responsibility to the individual trainee and his or her supervisors.

This decision meant that another means of data tracking, gathering, and consolidation was necessary, however. Scripting in the individual HyperCard stacks caused certain data to be captured unobtrusively as a trainee went through the program. At the start of a unit, the trainee must enter his or her name and the department of employment; after indicating whether a student employee or full-time employee, the trainee is not asked for further input of information. But the program automatically records information on the trainee's performance, for instance:

- the date,
- the unit being worked on,
- the time work began,
- times when the trainee passes certain markers in the unit,
- the identifying numbers of questions missed and a score,
- any comments the trainee wanted to volunteer when prompted at the conclusion of the unit,
- the time the unit was completed.

The computer writes this information to a text file each time the trainee uses a "quit" button to exit from the CBT program. Not using a trainee diskette meant that these data text files would have to remain on the hard disks of the machines the trainees used until there was some human intervention to remove them. At UTK, the Library Personnel Office assumed the responsibility for gathering and massaging the data. Each Friday, the text file from each training Macintosh is copied to a diskette and removed from the hard disk, and a "fresh" empty text file is put on the hard disk to replace the one just removed. These gathered files are consolidated in the personnel office, extraneous data (from "false starts" and similar errors) edited out, and reports generated that are sent to the trainees' supervisors for whatever action might be appropriate. Supervisors have lists of review and test questions, for example, so that they can analyze those missed by their trainees and pursue correction, remediation, or further training. If a book shelver appears still not to understand the Library of Congress classification system after going through the CBT module on that topic, the shelver's supervisor had best take further action either to train the employee fully or see that he or she is transferred to another position.

The CBT project directors at UTK did the preliminary analysis of what data were desired and the programming to capture the pertinent data and put that data into reports needed for administrative purposes. These programming requirements had to be integrated with the menu access decision already made. The directors also had responsibility for

other "front-end" items such as a sequence of "help" screens available on demand throughout the program.

Experience has shown that the menu approach to providing trainee access to the CBT program and the consequences of its administration at UTK have yielded a serendipitous benefit. The cost, formatting, control, and manipulation of the many diskettes that would have been necessary with a trainee diskette approach are not necessary. Although it takes time to gather data and generate the weekly reports, most of that work would have been necessary anyway, and it is far less time-consuming to download data from nine machines than it would have been to download data from—potentially—scores of trainee diskettes each week. That both trainee and supervisor, with a sense of control in their access to and use of CBT, have more of a feeling of "ownership" is certainly a boon, though *New Horizons in Library Training* is, in fact, an activity mandated by central administration.

Supervisors were introduced to the CBT program early. Then, knowing the contents of the program, they determined the sequence of units for trainees from their individual departments to follow and the desired pacing. This information is the basis of a departmental, paper checklist that is created by the personnel office and maintained by that office and the trainee or supervisor. Having supervisors who are responsible for the rest of a new employee's training also responsible for the CBT portion seemed, in the end, eminently sensible and appropriate to the developers of the program and the library administration at UTK.

If for some reason a trainee does not pursue CBT in the time recommended on his or her checklist, the personnel office sends a reminder to the department head about the lack of anticipated progression through the program. At the conclusion of the CBT, a trainee's supervisor sends the checklist to the personnel office for record-keeping purposes, and the Dean of Libraries sends the trainee a letter of congratulations for having successfully completed *New Horizons in Library Training*, an important part of library employees' training and orientation.

Although the emphasis here is on the development of machine-based training and learning, a few comments on human relations issues might serve to illustrate the relative success of the CBT program at UTK. The developers are working on a more detailed piece on this topic that will be published later if all goes well. The assumption was that for a new and "foreign" training program to work successfully in a large organization, it is not enough for an administration to mandate its use; it might, in that case, very well be viewed as merely some administrative requirement to be gotten around or negated as much as possible. Nor is it enough for the program to be innovative and

attractive. Rather, to be successful, the program must be understood by the people who are to use it and be viewed by them as something that will help them to do their jobs more successfully, easily, or confidently. In business jargon, a program must be "sold" to the actual users.

In the prolonged planning, development, and implementation of CBT at UTK, both the developers and the library administration paid considerable attention to the notion of "buy in" by rank-and-file employees and supervisors. The following succinct list of the major techniques and activities to promote "buy in" illustrates that effort.

1. Even before actual development began, a questionnaire asked selected staff and supervisors to rank topics thought to be suitable and *desired* for development in a CBT program. They understood that their input would help to shape the content of the proposed program.
2. The project directors negotiated with colleagues about becoming team members on (among other considerations and characteristics) the basis of distributed representation throughout the libraries. This became a "grapevine" means of generating continuing curiosity about and interest in the project.
3. As units reached a semblance of their intended shape and content, the development team used every opportunity to stage demonstrations of the project to different representative groups: administrators group, department heads council, staff meetings, etc.
4. At the developers' request, staff members of various levels and in different combinations were asked to evaluate units as they reached some degree of completion. Evaluative comments were treated with total seriousness, and the participating staff members recognized that they were contributing to the project. In due course, such participants received letters of thanks for their participation.
5. Supervisors, a key group to win over in any library enterprise, were apprised of plans and progress throughout the project and were introduced to the various units of instruction early in the final stages of development. Their familiarity with the project was essential for any fruitful discussion of implementation planning and acceptance.
6. As both veteran staff and new trainees experienced the program and then returned to their departments, they became de facto emissaries of the CBT program. It was helpful that the vast majority had had a very positive reaction, according to their comments and responses gathered by machine and paper mechanisms.
7. Finally, the fact that the project enjoyed complete administrative support from the highest levels from inception of the idea through implementation must be acknowledged. Announcements in the *Dean's Newsletter* and individual memos to affected staff on various

topics throughout the development and implementation of *New Horizons in Library Training* served to promote internalization of a project that otherwise might have been viewed as something largely external or peripheral to the everyday life of the UTK Libraries. It may have also been significant that even university administrators expressed respect and congratulations for the project.

Obviously other libraries who choose to implement the UTK-developed CBT program could not imitate completely such techniques and devices for consensus-building for acceptance, but the UTK techniques should provide some advice in ways to achieve institutionwide acceptance of programs that otherwise might meet with resistance. The "top-down" introduction of a new way to train staff is a particularly sensitive issue since any such program automatically sets up a situation in which the methods that have been used to train staff are contrasted with the new way, and individual staff egos, consequently, are sure to be touched.

#### THE UNIVERSITY OF KENTUCKY REPLICATION

Despite apparent success and ready acceptance by the staff of the UTK Libraries, the original directors of the project and the UTK personnel librarian wanted an opportunity to introduce *New Horizons in Library Training* in a research library setting where the staff had not been "contaminated" by direct exposure to the program or by publicity about it either in a presentation or from bits and pieces of information gathered informally. The basic goal was to be able to pretest a group of trainees to determine whether what appeared to be learning, as inferred from data on UTK trainees, was indeed occurring because of the CBT.

Since the libraries of the University of Kentucky and the University of Tennessee were cooperating on some projects already, the respective deans approved another project. A team of librarians from both institutions were to adapt the HyperCard stacks created at UTK to fit Kentucky's local circumstances and introduce the CBT program there. In essence, in exchange for assistance in creating appropriate local information for Kentucky, the staff there would administer a paper pretest to trainees, gather data on them while they went through the CBT, and forward that information to the UTK team for analysis. Coincidentally, additional work had to be done before starting the Kentucky project because Claris had released a new version of HyperCard after the UTK project's development had ended, and Kentucky was running the latest version (2.0) on their machines where the program

was to be mounted. All stacks had to be converted to the new version and checked for any flaws or discrepancies that resulted from the conversion.

The Kentucky study has not been concluded at the moment, but preliminary examination suggests comparable results in terms of trainee performance. There was apparently some significant difference, however, in general receptivity to the program. Trainee acceptance at Kentucky under the circumstances that obtained during the time of the data gathering was not so positive as that among trainees at UTK.

One readily identifiable problem was the availability of machines for Kentucky trainees to use. There the CBT program was mounted on machines in student computer laboratories, placing trainees in the situation of having to compete with students and others for use of the machines. There was clear resentment among some library trainees at the "waste" of their time waiting to get a machine on which to do some CBT assignment about which they were not too sure in the first place. That the activity was part of a study being conducted by the University of Tennessee rankled others. Publication of a formal study of the Kentucky findings is planned soon.

## PRESENT AND FUTURE

Funding for UTK Libraries has not been good in the past two years. Consequently, morale has been low for everyone: jobs were eliminated, and services, acquisitions, and even operating hours were reduced to balance the libraries' budget. In this milieu, no one proposed further development of CBT units, although the developers had thought that, once the trail had been blazed, others would follow, quickly, with the creation of additional units either to enhance the general program or to supplement it with training units for departmental activities. Only in the spring of 1992 has this expectation shown signs of being realized, for development of both kinds of units is now proposed.

One person wants a departmental unit on advanced Library of Congress classification training designed for stack attendants. The head of the acquisitions department is developing CBT units to teach more routine tasks to student workers in her department. And the two directors of the original project have received encouragement from the Commission on Preservation and Access to prepare a unit on preservation issues. If developed, the unit would be added to the menu of the general program. Or it could be distributed as a stand-alone unit promoting preservation awareness. Reference librarians have begun

studying sections of the CBT designed for staff with an eye toward modifying it for user training, either as computer-assisted instruction in group presentations or library self-instruction devices.

Some successful experimentation has occurred in the UTK Libraries in the conversion of the CBT HyperCard stacks to run on a DOS platform. Required to accomplish this are the software products Convert It and Toolbook and someone competent in both environments, besides a Macintosh with HyperCard and a DOS/OS machine with lots of memory. The process does not convert every aspect of the HyperCard product, and it does not convert without some programming intervention and other tuning and tweaking. It does work, however, although some things are lost such as some font varieties and sound resources; these can be supplied from other sources, just not converted directly from HyperCard. Because of this experimentation with converting stacks, current planning for the preservation unit calls for it to be made available in both formats, thus extending its applicability to many more sites than one version alone would.

There is additional study at UTK of the opportunities multimedia's inclusion offers in the realm of staff training. The product QuickTime has inspired thinking about the mix of real-time video segments in a general CBT presentation. The prospects are exciting for developers, but the cost of development rises with the addition of the multimedia dimension. And the widespread availability of machines capable of running the product in whatever form it might ultimately take is also an important question to be answered. All this must be weighed in the balance of cost-benefit analysis.

## CONCLUSIONS

What conclusions can one draw, then, after this long narrative of design, development, and implementation of a systematic CBT program for library staff in an academic library?

In the design of CBT, the developers at UTK learned that some assistance from persons whose expertise was in the practical areas of art, instructional design, and programming would have been more efficient than training the team members responsible for content, to do all work in those areas. They also learned the vital importance of team effort. Not only was the opinion of many rather than few (or one) advantageous for the development team in their freewheeling sessions of brainstorming for ideas, metaphors, or appropriate graphic representations, but the idea proved beneficial to the development process throughout. This included extensive use made of reviewers of various degrees of experience, training, and positions within the

libraries. The testing of instruction was found to be absolutely critical to success; even more so was this true for review and test questions. The developers found that it is, indeed, an area of expertise itself to fashion questions that truly test the information intended to be tested and to do so with clarity and without betraying bias.

Another challenge was for developers to understand the medium in which they were working, to understand how conveying information was different in HyperCard from what it was in print or orally. Among the following concerns the team developed, one can see the differentiating characteristics of this instructional medium.

Economy of expression became a foremost concern. A HyperCard presentation is not the place for wordy expression. Related to this is the necessity for including small amounts of text on a given screen—or at least having it appear to the trainee in small segments. Otherwise, a hypertext medium begins to look like a print medium that has been moved to a computer screen.

The quest for potent graphics became obsessive as the importance of the visual element in holding the trainee's attention was realized. And sometimes when the "perfect" graphic had been found, successfully scanned, and imported into HyperCard, it had to be excluded because of copyright considerations. (Or there was not time enough to obtain permission for use.)

Although time-consuming to construct, movement on the screen or outright animation became a powerful tool for punctuating text or graphic representation.

The design of instruction so that the trainee is in control was an important concept that was learned. Even when the learning of certain information is essential and, therefore, required by the instructional design, it should be presented with as much choice as to sequence as possible and with as many options as is reasonable. The use of alternate loops and other devices can assure coverage while allowing for a diversity of routes through the material. In short, involving the trainee, requiring some action on his or her part, is vital for successful interactive instruction.

Trainees found the review or testing after short intervals of instruction to be helpful and complained during evaluation when it was not present. They also preferred immediate feedback as to why their answers to questions were right or, more importantly, wrong; this in itself can be a powerful teaching and learning device.

To the surprise of developers, trainees liked sound resources even if they were overly simple or trite. Similarly, trainees appreciated the humorous or light-hearted style of presentation even though the fundamental instruction was serious.

The developers heard from reviewers and "field test" trainees or otherwise learned these points from actual development and evaluation

experience, regardless of whether they had encountered them in their preparatory studies of instructional design or not.

The distribution of the CBT program at little or no cost as had been promised in the original proposal to the Department of Education yielded a surprise or two. Librarians from other institutions sometimes found that what was intended by author teams to be "generic" instruction about library procedures was biased by local practice at UTK. Corollaries to this are that actual details of library practice vary widely from institution to institution even when the libraries seem comparable, and these local customs and traditions are important to librarians when they train employees to work in their institutions. This raises certain questions: How important are these differences in the delivery of library and information services to the clientele of institutions? Or might the community of libraries—or at least those similar in size and mission—move toward standardization of practice in the same way that many cataloging idiosyncrasies have been lessened over the years since the advent of shared cataloging? Such standardization might make training all staff easier (and perhaps using the libraries easier in the long run). Finding answers to these questions was beyond the scope of the CBT project at UTK, however, and would, no doubt, raise even further questions. (There is also the suspicion—not a clearly stated opinion yet—that there is little interest in truly generic instruction for training staff that is not modified to take into account variant local practices.)

Another conclusion the UTK developers reached is that CBT is an effective technique for staff training (and one that may bring a consistency to basic training for library staff that does not exist without CBT), but it is undeniably expensive to develop—if developed well. Furthermore, libraries collectively are not a big enough market apparently or are not rich enough, or the diversity of practice mentioned above is too great to warrant the development and marketing of staff training by private sector vendors. And the expense of development is often too great for one institution to bear the cost totally for the creation of an effective program. But two possible solutions to this dilemma are emerging. One is the development of materials that may be used commonly to educate the *users* of libraries about practices and to train library *employees*. Distributing the expense of development between user education and staff training would spread the cost burden. The other is the group-based project, in which several libraries pool their resources to create a CBT product useful to all member libraries for staff training. This would follow the HLIP model, mentioned at the beginning of this paper. Or, perhaps, a combination of these approaches might well put CBT development in the realm of the possible for interested libraries.

An indirect outcome that may occur in the activity of considering the development of a CBT program for staff is the focusing of attention

on the cost of training staff in nonautomated ways. In fact, recognition of that cost might become a factor in a commitment to an efficient and effective program of staff training as a mechanism for improving quality and efficiency of service to users, the ultimate *raison d'être* for libraries after all; that is, a systematic approach.

The CBT project at UTK and its implementation have generally been deemed a success, and the attention generated nationally—and even internationally—has been noteworthy. Clearly there is interest, and one presumes a need behind the interest, in this area of computer applications to library problems. But the project at UTK only broke the ground of a new library management territory. Full exploration is yet to take place; and as with any good research or project, it may have pointed a way to move, but it also raised as many questions as it answered in the process. Perhaps others now will join in pursuing them.

#### REFERENCES

- Bayne, P. S., & Rader, J. C. (1991). *Computer-based training for library staff: A demonstration project using HyperCard. Final performance report*. Knoxville: University of Tennessee Libraries. (ERIC Document Reproduction Service No. ED 333 902)
- Dick, W., & Carey, L. (1985). *The systematic design of instruction* (2nd ed.). Glenview, IL: Scott, Foresman.
- Gagné, R. M.; Briggs, L. J.; & Wager, W. W. (1988). *Principles of instructional design* (3rd ed.). New York: Holt, Rinehart, and Winston.
- Piette, M. I., & Smith, N. M., Jr. (1990). *Focus on research and evaluation: HyperCard library instruction*. Logan: Utah State University, Merrill Library.
- Talan, H. (Project Director). (1992). *HyperCard library instruction project*. San Francisco, CA: San Francisco State University, Leonard Library.