

Perspective

Electronic Records Training: Suggestions for the Implementation of the CART Curriculum

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Abstract: Prior to its dissolution, the Committee on Automated Records and Techniques (CART) developed a curriculum for electronic records training and education as part of a National Historical Publications and Records Commission (NHPRC) grant. This article explores decisions that were made by the developers regarding whom to train and adult learning needs and speculates on possible delivery methods for the curriculum, which include on-the-job training, workshops, formal education programs, distance education, and self-directed study.

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ELECTRONIC RECORDS are at the cutting edge of archival work. Although neither government nor the private sector has yet achieved the paperless office, more and more work is being done electronically. Consequently, electronic records issues need to be dealt with to ensure the preservation of our documentary heritage. Since many archivists come to their jobs with little computer background, the archival profession should provide training in appraisal, preservation, arrangement and description, and reference service for records in electronic form. This essay addresses the issues of whom to train, adult learning considerations, and possible delivery methods for the recently developed electronic records curriculum.

CART and Education

The need for electronic records training has long been recognized by the Society of American Archivists' (SAA) Committee on Automated Records and Techniques (CART) and its predecessors.¹ Over the years, curricula dealing with electronic records were developed, but as they evolved several problems arose. The structures linking the courses were often too complex; the teaching examples quickly became obsolete; and the materials were often poorly designed.² The need for an updated, well-structured, technologically flexible program with well-defined learning objectives became increasingly apparent as enrollment in automated records and techniques courses increased, archivists responding to surveys requested more courses, and employers began to remark

about the insufficient number of potential employees who are familiar with electronic records and automation.³ Consequently, CART, with the funding of the National Historical Publications and Records Commission, developed the Automated Records and Techniques Curriculum, which defines four clusters of core information concerning automated records and techniques: foundation, electronic records, management, and automated application.⁴ The first three primarily deal with electronic records, the focus of this paper; the fourth relates to automation within archival institutions.

The CART curriculum can be used as a planning and evaluation tool for professional associations and archival educators in the development and reworking of workshops and courses. Individual archivists can use it as a yardstick to measure their knowledge of automated records and techniques. Training based on this curriculum will ensure a minimum competency for archivists working with electronic records. The implementation of the curriculum presents the next challenge: deciding not only whom to train, but also how to train them. Furthermore, when developing delivery methods it will be necessary to consider adults' special learning needs. Possible methods include in-house training, courses offered by professional associations, graduate study, and self-directed study.

Decisions to Be Made

The development of training involves not only the selection of delivery methods, but also decisions regarding whom to train. Archival institutions need to determine

¹For a concise history of SAA's efforts in electronic records training, see Thomas Brown, "The Society of American Archivists Confronts the Computer," *American Archivist* 47 (Fall 1984): 366-82 and "A Decade of Development: Educational Programs for Automated Records and Techniques with the Society of American Archivists," *American Archivist* 56 (Summer 1993): 410-23.

²Brown, "A Decade of Development," 423.

³Margaret Hedstrom, "Teaching Archivists About Electronic Records and Automated Techniques: A Needs Assessment," *American Archivist* 56 (Summer 1993): 425-26.

⁴For a fuller description of this project, see Victoria Irons Walch, "Final Report: Automated Records and Techniques Curriculum Development Project," *American Archivist* 56 (Summer 1993): 468-505.

whether they want to provide basic training for all archivists or only for selected electronic records specialists who will handle all records maintained in electronic form.⁵ As Terry Cook argues

[T]he assertion that one archivist cannot care for all types of media generated by the administrative unit for which [s]he is responsible is a red herring. . . . Storage and handling peculiarities could easily be handled by auxiliary technical support staff.⁶

⁵The Automated Records and Techniques Curriculum Development Project recommends that SAA and CART adopt as a goal that every archivist in the United States be exposed to the foundations cluster by the year 2000. Walch, "Final Report," 479.

The National Archives and Records Administration (NARA) currently provides electronic records instruction to newly hired archivists through the Archivist Career Training Program. The Kentucky and Mississippi state archives have decided to train all archival staff in electronic records. *Archival Administration in the Electronic Information Age: An Advanced Institute for Government Archivists* report to NHPRC (The School of Library and Information Science, University of Pittsburgh; the National Association of Government Archives and Records Administrators; and the Council on Library Resources, 3–15 June 1990), 31–32. Pennsylvania, the United Nations, and the National Archives of Canada have incorporated electronic records into their entire archival and records management programs and do not separate the records based on media. "The Commonwealth of Pennsylvania," *Bulletin of the American Society for Information Science* 20 (October–November 1993): 18; Liisa Fagerlund, "The United Nations," *Bulletin of the American Society for Information Science* 20 (October–November 1993): 19; and Telephone Interview with Cynthia Lovering, archivist, Government Archives Division, National Archives of Canada, College Park, Md., 14 April 1994. Currently, Australia's program incorporates information about electronic records in several of its training modules. Dagmar Parer would also like to eliminate the Electronic Records unit and incorporate automated records into the other functional branches. Esther Robinson, Technical Training, Australian Archives, to author 4 May 1994; and interview with Dagmar Parer, director of Electronic Records, Australian Archives, College Park, Md., 13 April 1994.

⁶Terry Cook, "The Tyranny of the Medium: A Comment on 'Total Archives,'" in *Canadian Archival Studies and the Rediscovery of Provenance*, ed. Tom Nesmith (Meutchen, N.J.: Scarecrow Press, 1993), 413.

To ensure that archivists can care for records in electronic form, archivists, records creators, and computer professionals must "speak the same language." Although archivists and their institutions' technical staff use similar terms, the expressions often have different meanings. For instance, technical specialists use the term *archiving* to refer to the creation of a back-up. Although not usually used as a verb within the archival profession, an archivist still equates *archiving* with appraising, preserving, arranging and describing, and providing access to records in archival holdings.⁷ Even though many archives will employ a technical support staff to handle the preservation of electronic media, archivists still require a basic knowledge of technology to facilitate communication with both the program units and the computer staff who use and maintain electronic systems.

Policy decisions on whom to train will be based on program development and staff deployment. When making these determinations, archival managers should realize that an estimated 75 percent of all government transactions will be in electronic form by the year 2000.⁸ Nongovernment archives should recognize that technology has invaded the private arena as well. Ideally, all archivists should be trained to handle this technology.

After deciding whom to train, archival institutions and professional associations may want to consider the learning needs of the trainees because an understanding of the adult learning process is essential to any professional training program. Margaret Hedstrom asserts that most archival instructors are unfamiliar with teaching

⁷Catherine Bailey, "Archival Theory and Electronic Records," in *Canadian Archival Studies and the Rediscovery of Provenance*, edited by Tom Nesmith (Meutchen, N.J.: Scarecrow Press, 1993), 423.

⁸U.S. Congress House. *Taking a Byte Out of History: The Archival Preservation of Federal Computer Records*, 101st Cong., 2nd sess., 1990, H.R. 101-978, 2.

methodology; consequently, they can benefit from an exploration of adult education techniques.⁹ Although the debate continues as to whether adults' learning processes differ from those of children, most educators agree that information should be presented to the learner in recognition of his or her knowledge base and experience.¹⁰

Most children are taught using instructor-centered methods. They are assumed to be dependent personalities with little experience to serve as a resource for learning. They come ready to learn what they are told to learn. Consequently, the teacher is responsible for making the decisions about what should be learned, how it should be learned, when it should be learned, and how to evaluate the students' grasp of the information.¹¹ In this situation, students do not collaborate with the instructor, but instead rely on the teacher to make these decisions.

Adult educators recognize that adults have a broader knowledge base, are more independent and self-directed, and have a greater need to know why they are expected to learn something.¹² Because they have a broader knowledge base on which to draw, adults often prefer greater use of experiential learning, such as discussions, problem solving, simulation exercises, and field experiences.¹³ Adult educators also believe that adults need to be self-directing.

As students they often wish to have input into course content and structure. They want to work with the instructor to determine what is to be taught, how it is to be taught, and how they wish to be evaluated.¹⁴ Unlike children who are subject oriented, adults are often task oriented. They want to learn information that they can apply directly to the duties and responsibilities inherent in their roles of worker, spouse, parent, and citizen.¹⁵

Because of habits or biases, however, adults may be less open to new ideas. Some adults may have to unlearn negative attitudes toward education.¹⁶ The myths that adults lose their ability to learn as they age and that older employees lack motivation to participate in continuing education still exist.¹⁷ One study shows that the prevailing stereotype paints older adults as rigid, unreceptive to new ideas, and less capable of learning. Although empirical evidence does not support this viewpoint, age-related differences in confidence level could inhibit learning for older adults.¹⁸

Although an SAA survey suggests that archivists see electronic records as an important learning area, many may still feel some apprehension.¹⁹ According to a 1989

⁹Hedstrom, "Teaching Archivists About Electronic Records and Automated Techniques," 426.

¹⁰For greater insight into this debate see Sharan B. Merriam and Rosemary S. Caffarella, *Learning in Adulthood: A Comprehensive Guide* (San Francisco: Jossey-Bass, 1991); Malcolm S. Knowles, "Adult Learning," in *Training and Development*, ed. R. L. Craig (New York: McGraw-Hill, 1987), 168-79; Daniel D. Pratt, "Andragogy as a Relational Construct," *Adult Education Quarterly* 38 (Spring 1988): 160-81; and Stephen D. Brookfield, *Understanding and Facilitating Adult Learning* (San Francisco: Jossey-Bass, 1986).

¹¹Knowles, "Adult Learning," 168.

¹²Knowles, "Adult Learning," 170.

¹³Knowles, "Adult Learning," 170; and Merriam and Caffarella, *Learning in Adulthood*, 307.

¹⁴Merriam and Caffarella, *Learning in Adulthood*, 304, and Brookfield, *Understanding and Facilitating Adult Learning*, 14.

¹⁵Merriam and Caffarella, *Learning in Adulthood*, 304.

¹⁶Merriam and Caffarella, *Learning in Adulthood*, 307; and Knowles, "Adult Learning," 171.

¹⁷Merriam and Caffarella, *Learning in Adulthood*, 140; and Marilyn Gist, Denson Rosen, and Catherine Schwoerer, "The Influence of Training Method and Trainee Age on the Acquisition of Computer Skills," *Personnel Psychology* 41 (1988): 257.

¹⁸B. Rosen and T. H. Jerdee, "The Nature of Job-Related Age Stereotypes," *Journal of Applied Psychology* 61 (1976): 180-83; and Gist, Rosen, and Schwoerer, "The Influence of Training Method," 257.

¹⁹Jane A. Kenamore, "Education Notes: Continuing Education Survey Results," *SAA Newsletter* (September 1990): 6-9, and "'Electronic Records and Automated Techniques' Cited as Critical Learning Needs," *Archival Outlook* (September 1993): 10.

survey, 60 percent of archivists are over forty years old. As a result, most probably had little computer experience as college students and may therefore feel less confident working with computers.²⁰ As Linda Henry contends, "Reluctance to become computer literate is the largest obstacle in the path to becoming an electronic records archivist."²¹ Those who are afraid of computers avoid them. They feel intimidated and stupid when confronted with the technology.²² Archivists who experience this apprehension may be reluctant to engage in electronic records training. Although adults learn best when they volunteer to do so, the new information technology demands that archivists expand their knowledge. CART members pointed out that "most good electronic records archivists were good archivists to begin with . . . [and] a solid grounding in basic archival principles and techniques [is] essential for dealing with records in any media."²³ Therefore, supervisors should try to encourage reluctant archivists to continue their education in the area of electronic records.

Instructors should also try to develop delivery methods that will decrease the anxiety factor. For example, anecdotal evidence shows that older adults prefer experiential or self-paced learning matched with confidence-building mechanisms.²⁴ When designing delivery methods for archivists, instructors will need to take into account both their students' knowledge base and the possible level of apprehension. Teachers should consider designing learner-centered courses in collaboration

with their students. If it is impossible to include all students in the planning process, instructors may want to work with a planning committee made up of representatives from all constituencies to participate in course content and design.²⁵ In the archival field, CART played this role by developing course content as part of its curriculum project. Instructors should also develop a sense of mutual respect and set a climate of collaboration rather than one of competition among their students. Self-diagnostic procedures could be used to ensure that the students are aware of their own learning needs. Once diagnosed, these needs can then be translated into objectives. At the end of the learning process, the teacher and student will need to evaluate whether the objectives were achieved.²⁶ On the whole, learning-centered versus instructor-centered styles work best in small courses, action projects, workshops, and club programs.²⁷

Collaborative teaching, however, may not always be appropriate for the learning situation. For instance, when the content is entirely foreign to the learners, the teacher may want to take a more instructor-centered approach to ensure that the required information is learned. With regard to the CART curriculum, teaching style may depend on the students' knowledge of computers. For those students who are computer literate, a more collaborative approach might prove beneficial. For those with little computer background, the instructors will want to define the objectives and design the course and evaluation process to ensure that the necessary knowledge, as defined by the clusters, is learned. If a more collaborative approach is chosen, however, archival educators should assess the learners' abilities as well as their commitment to the planning and fulfillment of specific learning activi-

²⁰Victoria Irons Walch, "Innovation Diffusion: Implications for the CART Curriculum," *American Archivist* 56 (Summer 1993): 507.

²¹Linda Henry, "An Archival Retread in Electronic Records: Acquiring Computer Literacy," *American Archivist* 56 (Summer 1993): 515.

²²Quoted in Henry, "An Archival Retread in Electronic Records," 517.

²³Walch, "Final Report," 475.

²⁴Gist, Rosen, and Schwoerer, "The Influence of Training Method," 258.

²⁵Knowles, "Adult Learning," 174.

²⁶Knowles, "Adult Learning," 175.

²⁷Merriam and Caffarella, *Learning in Adulthood*, 226.

ties. In those instances where students are reluctant to participate in course design, instructors should assume total responsibility for course design and implementation.²⁸

An Array of Courses and Training Programs

Once an understanding of the adult learner is achieved, courses and training programs can be tailored to fit the needs of the student and the organization. One possible arena for training archivists is the workplace. Since larger archives usually have greater resources (money, staff, and materials), they have a greater opportunity to train their own staff through courses, seminars, and hands-on training. Since on-the-job training can be episodic, fragmented, and disconnected, institutions should consider developing a systematic, incremental, and continuous program that would build upon the objectives laid out in the CART curriculum. Through the use of learning contracts, supervisors could ensure that all archivists participate in the training program. The contracts should indicate not only what the student is expected to learn but also what resources the institution will provide and how the student will be evaluated. A training program designed along these lines will fulfill the archivists' needs as adult learners since they will have a greater say in the learning process. By talking with their supervisors during the writing of their learning contracts, the archivists not only will know exactly what is expected of them, but also will be able to recommend the evaluation method.²⁹ Although the CART curriculum will dictate course content, the human resource development staff and the supervisors should try

to seek the input of the students in determining how to present the material. In addition, supervisors, after discussing the training program with staff members, will want to have input into what is taught, how it is taught, and how often a course is offered. Supervisors should also be encouraged to participate in the courses to ensure that their staff members are receiving the information required to do their jobs effectively.³⁰

After designing a training program based on the building blocks of the CART curriculum, an archival institution may want to consider sponsoring internships for archivists from smaller organizations. By doing so, the larger institutions will be able to advance an understanding of electronic records within the profession. These archives could establish residencies similar to the NHPRC's Fellowships in Archival Administration. Since the intern's productivity will only partially offset the cost of training, electronic records internships could either be funded by grants or be established on a reimbursable-cost basis. Although internships such as these often benefit the intern more than the sponsoring institution,³¹ the residencies will promote proper handling of electronic records by a larger number of archivists in a variety of archival settings. As a result, the profession as a whole will be strengthened in its ability to manage and preserve electronic records.

²⁸The key to determining how involved the student becomes in the course design depends on her or his competence in deciding what to learn and commitment and confidence in determining the content and learning process. Pratt, "Andragogy as a Relational Construct," 160-77.

²⁹Knowles, "Adult Learning," 178.

³⁰The Australian Archives has developed an in-house Technical Training Scheme that is distance-education based, is not compulsory, and does not automatically grant staff the right to participate during working hours. Participation during working hours must be approved by supervisors. The scheme, which does not relate solely to electronic records, is intended to provide consistency across the organization, a more integrated induction of new staff, and intellectual challenge for senior staff. As an option, archival institutions interested in developing an incremental, systematic training program should read Australian Archives, *Technical Training Scheme: Handbook* (Braddon ACT: Australian Archives, 1992).

³¹Walch, "Final Report," 491.

Training by professional organizations is one alternative to in-house programs. Although SAA and other professional archival associations have a long history of providing training and continuing education through workshops and seminars, they should consider strengthening and expanding their offerings in electronic records. Frederick Stielow, an archival professor at Tulane University, however, argues that "workshops are simply inappropriate venues for teaching the core ideas of a profession." For the most part, they are too short and episodic. As a result, readings, projects, interactions, and tailored individual instruction are limited. Furthermore, research assignments and the teaching of theory are next to impossible. He also notes that provisions for sufficient hardware and software for hands-on teaching are difficult to obtain in a workshop setting.³²

Despite these flaws, workshops continue to have a role in the teaching of automated records and techniques. Workshops can be used to introduce new developments and provide refresher courses to experienced archivists. Furthermore, professional associations and archival institutions can work together to develop an incremental training program as opposed to individual, disjointed courses. Since effective continuing education will only result in an environment that provides building blocks of learning, professional associations should consider dividing courses into elementary and advanced classes. Professional associations could establish this type of incremental learning using the CART curriculum objectives.

Representative groups within the professional organizations could also collaborate in the design of delivery methods that meet

the learning needs of their constituents. CART has already aided this effort by providing the course content. Supervisors could suggest course designs that will best suit the needs of their staffs. They could also encourage participation by providing for employees the time or resources needed to attend a series of courses. Though not the best solution, workshops permit expert instructors to teach archivists whose institutions are unable to provide adequate electronic records instruction. Furthermore, courses centrally developed through collaboration between professional associations and archival institutions will ensure consistent training for archivists no matter where they work. Interaction with colleagues from different types of organizations will also ensure an open dialogue and a chance to learn from others' triumphs and defeats.

Besides workshops, the National Association of Government Archives and Records Administrators (NAGARA) and the University of Pittsburgh have sponsored six two-week institutes for chief administrators of state government archives on electronic records and strategic planning. The institutes allowed archival administrators to confront issues and concerns raised by the new information technology. Richard J. Cox, administrator of the 1991-93 institutes, wrote in the final report that the program succeeded in raising the awareness of state archivists, but whether an actual change in the handling of electronic records occurred will not be apparent for several years. Nonetheless, participants agreed that the greatest advantage of "Camp Pitt" was the development of personal contacts and networks to deal with electronic records issues.³³ Although he be-

³²Frederick Stielow, "The Impact of Information Technology on Archival Theory: A Discourse on an Automation Pedagogy," *Journal of Education for Library and Information Science* 34 (Winter 1993): 52-53.

³³Richard J. Cox, "Narrative Report No. 4: The Final Report, Archival Administration in the Electronic Information Age," June 1993, 11, 18-19, Grant No. 91-073, 1991-93, Closed Grant Files, National Historical Publications and Records Commission, National Archives and Records Administration, Washington, D.C.

lieves the design of the program should be reevaluated, Cox maintains that advanced education, such as the institutes, should be formulated on the national level. To meet the educational requirements of archivists in diverse settings, national associations will need to provide the resources and employers will have to articulate their needs and interests.³⁴

Unfortunately, few institutions have the resources to send their staff to extended institutes. In a letter to David J. Olsen, project planner for the fourth Pittsburgh institute, Cox suggested that the institute no longer try to reach every state archives but instead nurture five state archives to develop comprehensive electronic records programs. These could serve as model programs that could possibly accept interns from other institutions.³⁵ Another alternative is the development of an archival mobile training team that would travel to archival institutions to develop and implement training programs. Rather than sponsor institutes outside of a particular archival setting, professional associations may want to consider developing programs that can be tailored to suit the particular needs of an institution. Before embarking on such an endeavor, the professional associations would need to develop a pool of qualified individuals who would be able to travel for extended periods of time. This type of program could be funded through grants or out of the training fund of the archival institution. The mobile training team could work with the institution for an extended period of time, or trainers from this team could be called in to participate in the institution's regular training program.³⁶

SAA's Archival Preservation Management Training Program, which is funded by the National Endowment for the Humanities, is an example of a delivery method tailored to the specific needs of the participant and her or his institution. This training program does not, however, send out teams to individual institutions. Instead, during a series of three workshops, the participants are encouraged to review the curriculum and discuss their expectations to ensure that their specific needs are met. The students are also expected to collect data on the preservation status of their repositories prior to the first workshop. During the training assignments, participants use this raw data to make preservation policy decisions that best reflect the needs of their own institutions.³⁷ Furthermore, after each workshop, the students are required to implement their decisions and to share what they have learned by providing basic training to the staffs in their own organizations.³⁸ For the most part, these workshops focus on managerial issues. Therefore, this program, which is designed to fulfill the particular needs of each participating student and institution, could

tems (ACCIS) recommended to the ACCIS Secretariat that ACCIS maintain a roster of workshop leaders who would travel to various United Nations' organizations to conduct sessions in electronic records management. The organizations would be required to pay the actual training and travel costs. Advisory Committee for the Coordination of Information Systems (ACCIS), *Management of Electronic Records: Curriculum Materials* (New York: United Nations, 1992), 10.

³⁷SAA Preservation Training Program Advisory Committee, "SAA-APMTP Curriculum Narrative," (n.d.) 3, "SAA Preservation Management Training Program," (n.d.) personal files of Fynnette Eaton, chief, Technical Services Branch, Center for Electronic Records, National Archives and Records Administration, College Park, Md.

³⁸Danielle Feuillan, preservation program assistant, Society of American Archivists to author, 31 May 1994; and Fynnette Eaton, chief, Technical Services Branch, Center for Electronic Records, National Archives and Records Administration, interviewed by author, College Park, Md., 31 May 1994.

³⁴Cox, "Narrative Report No. 4," 28-29.

³⁵Richard Cox to David J. Olsen, 26 August 1992, "Archival Administration in the Electronic Information Age," R3234-NA University of Pittsburgh, 93-053, Active Grant Files, National Historical Publications and Records Commission, National Archives and Records Administration, Washington, D.C.

³⁶A working group of the United Nations' Advisory Committee for the Coordination of Information Sys-

serve as a model for those teaching the management cluster of the CART curriculum.

Graduate Education, Training, and Education

The delivery methods discussed above relate primarily to training. To educate archivists, it may be necessary to develop graduate-level courses that deal with electronic records. Meyer H. Fishbein distinguishes between training and education. *Training*, which establishes clear goals and provides instruction about specific applications, takes place primarily in short-term seminars, workshops, and on-the-job instruction. *Education*, on the other hand, provides a general knowledge about history, theory, concepts, and practices.³⁹ In brief, training tends to improve skills, whereas education increases understanding.

Currently, few schools offer formal education in electronic records, but professional associations and graduate instructors are aware of this need. SAA's Committee on Education and Professional Development has drafted "Guidelines for the Development of a Curriculum for a Master of Archival Studies Degree." This document does not directly address how to teach students about electronic records, but the guidelines do indicate the need to explore the challenge of the new media to archival thinking.⁴⁰

Possible graduate education options for teaching students about electronic records include incorporating electronic records into traditional courses, providing courses

designed solely around electronic records, and sponsoring topical lectures on information technology. Graduate educators Terry Eastwood and Richard Cox maintain that electronic records should be incorporated into the fundamental courses on basic theory, arrangement and description, appraisal, and reference service, rather than be separated out according to media.⁴¹ Since many graduate schools have only one professor knowledgeable in electronic records, students may not have the opportunity to learn divergent viewpoints. One way of countering this shortage is through the establishment of "distance mentors." Professors could ask practicing archivists to work with individual students on a one-to-one basis. Communicating via the Internet, the telephone, or through the mail, the mentors could answer questions and serve as sounding boards for the students. In turn, the students could share these conversations during classroom discussions.⁴²

Although traditional classes will provide the archival background needed to deal with electronic records, graduate educators should consider incorporating into their archival programs courses that discuss the unique nature of information technology. Rather than developing the courses themselves, the instructors could encourage stu-

⁴¹Terry Eastwood, "Can Automated Records and Techniques Be Integrated into Archival Education?," *American Archivist* 56 (Summer 1993): 464; and Richard Cox, "The Roles of Graduate and Continuing Education Programs in Preparing Archivists for the Information Age," *American Archivist* 56 (Summer 1993): 451-52.

⁴²According to Tom Brown, Laine Ruus, a professor at the Library School, University of Toronto, used this method when she first began teaching a course on managing social sciences data. Since she was the only faculty member who had experience in this area, she wanted to ensure that her students had ample opportunity to learn from others knowledgeable in this field. Tom Brown, chief, Archival Projects Branch, Center for Electronic Records, National Archives and Records Administration, interviewed by author, College Park, Md., 13 May 1994.

³⁹M. H. Fishbein, *A Model Curriculum for the Education and Training of Archivists in Automation: A RAMP Study* (Paris: General Information Programme and UNISIT-United Nations Educational, Scientific, and Cultural Organization, 1985), 3.

⁴⁰Society of American Archivists' Committee on Education and Professional Development, "Revised Draft: Guidelines for the Development of a Curriculum for a Master of Archival Studies Degree," *Archival Outlook* Insert (January 1994): 5.

dents to take classes in other fields.⁴³ The Committee on Education and Professional Development supports this idea and maintains that courses that introduce elements of other disciplines provide archival students with complementary knowledge they can relate to archival issues.⁴⁴ If professors choose not to enroll their students in a semester-long course in another field, they could sponsor guest lecturers. Obvious choices include instructors in the fields of library and information science. Expansion, however, will ensure that archivists understand how computers are currently used by those outside of the information profession. As one option, archival schools could schedule lectures by sociologists and scientists who are increasingly using computers in their research endeavors.⁴⁵ Anne Gilliland-Swetland, a doctoral candidate and adjunct faculty member at the University of Michigan, maintains that archivists need to understand the wider social context in which electronic records are created if they are to develop a core knowledge of computers and the intellectual skills needed to establish innovative and flexible archival programs.⁴⁶

⁴³Cox, "The Roles of Graduate and Continuing Education Programs," 453.

⁴⁴Committee on Education and Professional Development, "Guidelines for the Development of a Curriculum for a Master of Archival Studies Degree," 3.

⁴⁵For a greater understanding of how social scientists and humanists currently use information technology in their research practices, see Avra Michelson and Jeff Rothenberg, "Scholarly Communication and Information Technology: Exploring the Impact of Changes in the Research Process on Archives," *American Archivist* 55 (Spring 1992): 236-315.

⁴⁶The Committee on Education and Professional Development also emphasizes a need for context and suggests that one-sixth of a student's time should be spent in courses that provide an understanding of the settings in which records are created. Anne J. Gilliland-Swetland, "From Education to Application and Back: Archival Literature and an Electronic Records Curriculum," *American Archivist* 56 (Summer 1993): 534; and SAA's Committee on Education and Professional Development, "Guidelines for the Development of a Curriculum for a Master of Archival Studies Degree," 3.

Nonetheless, graduate schools should also offer lectures about specific types of technology to ensure that archivists are able to communicate with the records creators and the technical staff who maintain the records. For instance, graduate schools may want to invite computer scientists to participate as guest lecturers to provide basic terminology and an understanding of computer use. Other options include presentations on the current and future use of geographic information systems (GISs), object-oriented data bases, or other emerging technologies. The lectures should address how the technology is used and how the information can best be preserved for future use. Follow-up instruction will need to address how archivists might handle the informational and evidential content of the systems, as well as the technical concerns that may inhibit preservation of the information as it used by the records creators.

Above all, graduate education should encourage both pre- and postappointment archivists to explore information technology and its impact on current archival theory. Training often acts as a stopgap measure to ensure that electronic records are preserved, but education will encourage archival students to consider and research the broader implications of the information technology and how it might affect archival theory and practices. Consequently, the archival profession should continue to advocate the incorporation of electronic records issues into graduate education curricula to ensure that the media does not overshadow archival theory.

The Case Study and Self-Directed Study Approaches

As described above, in-house training, courses offered by professional organizations, and graduate education often occur in a formal classroom setting. To improve formal classroom training and education, the NHPRC is currently funding a grant to

produce ten case studies with teaching notes that address the administration of electronic records and the use of information technologies.⁴⁷ As described by Anne P. Diffendal, project director, case studies, unlike textbooks, "address real life situations in all their complexity and ambiguity." Consequently, electronic records are perfect for this method of analysis because case studies require students to draw on a wide range of knowledge and experience to address issues that would not normally surface during classroom lectures and discussion. Case studies also encourage the development of problem-solving skills.⁴⁸ After studying the issues raised in a case study, students would be able to analyze the issues in a writing assignment, classroom discussion, or in preparation for a guest lecturer. This preparation would allow students to ask questions and present alternatives to the systems or approaches currently in use at archival institutions.⁴⁹

Diffendal asserts that case studies and case method teaching are intended for classroom use to facilitate learning through the involvement of students in problem solving and the exchange of ideas with oth-

ers in the class.⁵⁰ Once these case studies are developed, instructors can use them in on-the-job training classes, workshops, and graduate courses. Unfortunately, barriers that prevent many adults from attending training and continuing education courses exist for archivists as well. Common obstacles include scheduling problems, problems with location or transportation, time requirements, and lack of information about programs and procedures. The two most frequently mentioned obstacles, however, relate to time and place.⁵¹ Traditionally, courses are structured for the convenience of the providing organizations. Most adults, however, are unable to fit the classes into their schedules. This barrier could be removed by encouraging self-directed study and by developing distance-education programs, which would enable teachers to reach students regardless of time and distance.

As a delivery method, self-directed study may prove invaluable in the realm of electronic records. Even in situations where formalized group courses are available, some archivists may prefer a more individualized program. By devising their own learning activities, they will have greater individual control, both in terms of personal learning style and the learning process itself. They will also be able to set their own pace and change learning strategies if they so desire.⁵² Professional associations, archival institutions, and graduate schools should consider ways to facilitate self-directed study. Adult education specialists assert that self-directed

⁴⁷During the development of the CART curriculum, the project team suggested that case studies might prove useful in the teaching of the curriculum's objectives. Richard Kesner, "Employing the Case Study Method in the Teaching of Automated Records and Techniques to Archivists," *American Archivist* 56 (Summer 1993): 523.

⁴⁸Anne P. Diffendal, "Project Narrative," 2, "Automated Case Studies," R3354-IL Society of American Archivists, 94-007, Active Grant Files, National Historical Publications and Records Commission, National Archives and Records Administration, Washington, D.C.

⁴⁹Constance B. Schultz, director of Applied History Program at the University of South Carolina, to Anne Diffendal, 22 March 1993, "Automated Case Studies," R3354-IL Society of American Archivists, 94-007, Active Grant Files, National Historical Publications and Records Commission, National Archives and Records Administration, Washington, D.C.

⁵⁰Anne P. Diffendal, project director, to Lisa Weber, assistant program director for technological evaluation, NHPRC, 17 August 1993, "Automated Case Studies," R3354-IL Society of American Archivists, 94-007, Active Grant Files, National Historical Publications and Records Commission, National Archives and Records Administration, Washington, D.C.

⁵¹K. P. Cross, *Adults as Learners: Increasing Participation and Facilitating Learning* (San Francisco: Jossey-Bass, 1981), 104.

⁵²Merriam and Caffarella, *Learning in Adulthood*, 44.

learning does not necessarily mean learning in isolation. On the contrary, self-directed learners often seek assistance from friends, experts, and acquaintances as they plan and carry out their learning activities.⁵³ Archival institutions should try to maintain working environments that encourage self-directed learning by providing access to library collections, bibliographies, and interaction with experienced, knowledgeable archivists.

Distance-education packages are another means of providing structured materials for students to use at their own pace. In this type of learning situation, instructors communicate with their students by mail, telephone, or electronic media. Currently, the Australian Archives' training program uses the distance-education approach. Rather than attend weekly lectures and seminars or classes conducted in workshops, Australian archivists study on their own. The training materials provided are primarily print-based.⁵⁴ Distance-education packages created by other organizations can incorporate videotapes or audiotapes, computer programs, or even multimedia compact discs, which could include visuals, student exercises, and simulations.⁵⁵ Technology, however, cannot drive the coursework; sound learning principles must be used to select the material and develop the design.⁵⁶

A more advanced type of self-directed study could involve computer-assisted learning (CAL). This type of distance education would not necessarily require access to a human tutor because the instructor is designed into the application. Advocates of CAL state that tutorial applications developed through the use of artificial intel-

ligence techniques can select appropriate examples; provide help where the student needs it; work arbitrary examples chosen by the students; review previous material; provide immediate feedback and alternative solutions; and measure the background and progress of the student. Rather than merely repeating material or reviewing old material, the intelligent tutor can determine the student's conceptual problems and help resolve them.⁵⁷ CAL also has the capability to cope with the diverse needs and characteristics of the adult learner by providing alternative means of reaching goals and flexibility for the learner in controlling and pacing the learning experience. Furthermore, CAL allows the student to learn in a secure, private, and patient manner.⁵⁸ Studies have shown that this type of learning has proven beneficial for adults learning about computers.⁵⁹ In many ways CAL may prove more effective and efficient than traditional instruction.

"Intelligent tutors," however, remain in the experimental stage. Nonetheless, this form of distance learning may prove fruitful in the future. Programs could be developed to teach archivists about the unique nature of electronic media and to help students formulate the types of questions that must be asked when dealing with electronic records.

Unfortunately, as revealed in the CART final report, any type of distance-education

⁵³Merriam and Caffarella, *Learning in Adulthood*, 55.

⁵⁴Australian Archives, *Technical Training Scheme: Handbook*, 14.

⁵⁵Walch, "Final Report," 492; and Gilliland-Swetland, "From Education to Application and Back," 542.

⁵⁶Quoted in Merriam and Caffarella, *Learning in Adulthood*, 42-44.

⁵⁷A. Gable and C. V. Page, "The Use of Artificial Intelligence Techniques in Computer-Assisted Instruction: An Overview," in *Instructional Software: Principles and Perspectives for Design and Use*, ed. D. F. Walker and R. D. Hess (Belmont, Calif.: Wadsworth, 1984), 267; and Michelson and Rothenberg, "Scholarly Communication and Information Technology," 256.

⁵⁸Quoted in Merriam and Caffarella, *Learning in Adulthood*, 46.

⁵⁹Gist, Rosen, and Schwoerer, "The Influence of Training Method," 255-65; and Elaine Zandri and Neil Charness, "Training Older and Younger Adults to Use Software," *Educational Gerontology* 15 (1989): 615-31.

package can be difficult and expensive to develop and update.⁶⁰ However, information technology and increased connectivity may provide the means to make packages more readily available and, therefore, more attractive, despite the cost. Furthermore, if packages are placed on-line at file transfer protocol (FTP) sites, developers may even find it less costly and difficult to update and disseminate the materials from a central, automated location.

Archival educators may also want to incorporate a broader view of distance education. Rather than developing only structured tutorial packages, the profession may want to use the "information highway" to make course materials available electronically without a direct link to a designated teacher. However, a listing of knowledgeable individuals who are willing to act as mentors could also be made available.⁶¹

Furthermore, archival institutions, professional associations, and graduate schools could also encourage unstructured distance education that would enable an archivist to begin learning about electronic records issues. They could use FTP sites, electronic conferences, and listservs as the primary means of dissemination.

Initially, an automated catalog of archival literature could be made available over

the Internet.⁶² Perhaps at the same site, a bibliography dealing solely with electronic records could also be made available. Previously printed bibliographies, such as Marion Matters' *Automated Records and Techniques in Archives: A Resource Directory*, would be easier to update and disseminate on-line.⁶³ Gilliland-Swetland suggests that SAA develop a state-of-the-art records manual that could be made available both in hard copy and at an FTP site for reference through electronic communications networks. She also proposes that a handbook of case studies and exercises, prepared by archival faculty and graduate students at universities across North America, be placed at an FTP site. The NHPRC case studies could also be placed on-line. Such sites could be hosted and coordinated at very little expense on a file server operated out of one of the graduate schools with a major archival education program.⁶⁴ The National Archives and Records Administration (NARA), or any other archival institution or association that maintains a web site, could also look into developing, maintaining, or providing easy access to this type of on-line information.

Electronic conferences, which encourage discussion and debate, are another means of disseminating information about electronic records. Although electronic conferences of this sort may prove more beneficial to experienced electronic records archivists, monitoring of the discussions by novices would expand their knowledge. Furthermore, questions raised by less ex-

⁶⁰Walch, "Final Report," 492.

⁶¹SAA has recently introduced the "SAA Mentoring Program" as a means of giving veteran archivists an avenue for sharing their knowledge and newer archivists an opportunity to learn from experienced archivists. "Electronic records" is one of the areas of interest used to unite mentor and "mentee." Consequently, as part of this program, seasoned electronic records archivists could share their experiences and knowledge with those unfamiliar with the new media. Participants are encouraged to communicate via telephone, facsimile, and e-mail. The program is not intended to provide technical training but to encourage greater communication between archival generations. Nonetheless, it does provide a means of sharing experiences.

⁶²Lida Churchville has indicated that placing the Archives Library Information Center (ALIC) on the Internet is a high priority. Limited resources, however, currently preclude this. Lida Churchville, chief librarian, National Archives and Records Administration, telephone interview with author, College Park, Md., 12 April 1994.

⁶³Marion Matters, ed., *Automated Records and Techniques in Archives: A Resource Directory*, (Chicago: Society of American Archivists, 1990).

⁶⁴Gilliland-Swetland, "From Education to Application and Back," 542.

perienced archivists may also encourage research and discussion into areas previously unconsidered.

If desired, electronic conferences dealing with particular types of electronic systems, such as GISs, could be established. Such conferences would also encourage the participation of nonarchivists. In this example, geographers could learn about archives and could indicate what type of information they want saved from these systems. Tom Ruller asserts that archivists need to look outside of the archival profession, as well as the information profession, to learn about information technology.⁶⁵ Electronic conferences provide one means to do so. As Avra Michelson and Jeff Rothenberg point out, "Communication . . . is fundamental to the advancement of scholarship."⁶⁶

Currently, the ARCHIVES Listserv and ERECS-L, the electronic records listserv, are available on the Internet and through Bitnet.⁶⁷ Greater use of these forums could advance archivists' knowledge of electronic records. Specific questions about how to handle a particular application could be asked and answered by individuals separated by distance. Since all subscribers would view both the questions and the answers, "teachers" could reach a wide audience.

As suggested above, technology provides an opening to self-directed learning. In fact, it may even encourage archivists to become innovators in an era of information technology. As described by Victoria Irons

Walch, an archival "innovator" is someone who becomes aware of innovation outside of the archival field and introduces it to others in the profession.⁶⁸ Although many archival innovators have already paved the way for the rapid acceptance of new technologies, use of automated resources will increase the number of archivists who look beyond the archival field to learn about new technologies.⁶⁹

For instance, an archivist engaged in self-directed study could use automated resources to research a selected archival topic. Through access to various gophers, FTP sites, web sites, and listservs, an archivist could find not only the most recent writing on a particular type of technology but could also come in contact with experts in the field. By finding bibliographic citations electronically, an archivist could conduct background research. At FTP sites, software tutorials could be found, which the archivist could download to gain hands-on experience with the technology.⁷⁰ Through the monitoring of listservs, the archivist can determine the current difficulties that users may be facing.

Through information technology, an archivist not only can learn of sources not normally cited in archival literature but also can come in contact with creators and users not bound by traditional archival theory. Through electronic conversations with those outside of the archival field, the archivist not only will be able to learn about specific types of information technology

⁶⁵Thomas J. Ruller, "A Review of Information Science and Computer Science Literature to Support Archival Work with Electronic Records," *American Archivist* 56 (Summer 1993): 546-59.

⁶⁶Michelson and Rothenberg, "Scholarly Communication and Information Technology," 262.

⁶⁷Peter Hirtle, Technology Research Staff, National Archives and Records Administration, "The Networked Archivist" (presentation given to the D.C. Caucus of the Mid-Atlantic Regional Archives Conference, National Archives and Records Administration, College Park, Md., 5 May 1994).

⁶⁸Walch, "Innovation Diffusion," 508.

⁶⁹Walch, "Innovation Diffusion," 512.

⁷⁰Currently, a large number of public domain and shareware software packages are available via FTP. While not directly related to the appraisal, preservation, arrangement and description, and reference service of electronic records, these packages provide a valuable resource for self-directed learners to experiment with different types of information technology. By understanding how to create and use records in an electronic setting, archivists can learn how to preserve the integrity of the records, describe their content, and provide access to them.

but will be able to share archival concerns with the creators and users. In doing so, he or she may discover that while archivists and users of the technology do not always speak the same language, they do share the same concerns. Although not all archivists will be comfortable in this type of self-directed research, this activity is essential in an age of ever-changing technologies. Consequently, archival institutions, professional associations, and graduate programs should do all they can to encourage and support those engaged in self-directed study.

Conclusion

Regardless of how an archivist learns about electronic records, it is essential that the profession encourage all archivists to gain some knowledge about information technology. The development of CART's

core curriculum was essential to ensure that archivists become aware of the primary issues and are able to adequately preserve and provide access to records in electronic form. Employers, professional organizations, and graduate programs can offer formal courses that recognize archivists' needs as adult learners. If barriers exist that hinder archivists' participation in a formal setting, the archival profession should encourage archivists to engage in self-directed study. No one delivery methodology will fulfill all archivists', or even one archivist's, learning needs. Nonetheless, through interaction with one another, archival institutions, professional associations, and graduate schools should be able to offer a variety of opportunities that will fulfill the profession's training requirements in this era of information technology.