

Assessment of Need and Intended Results

Assessment of Need

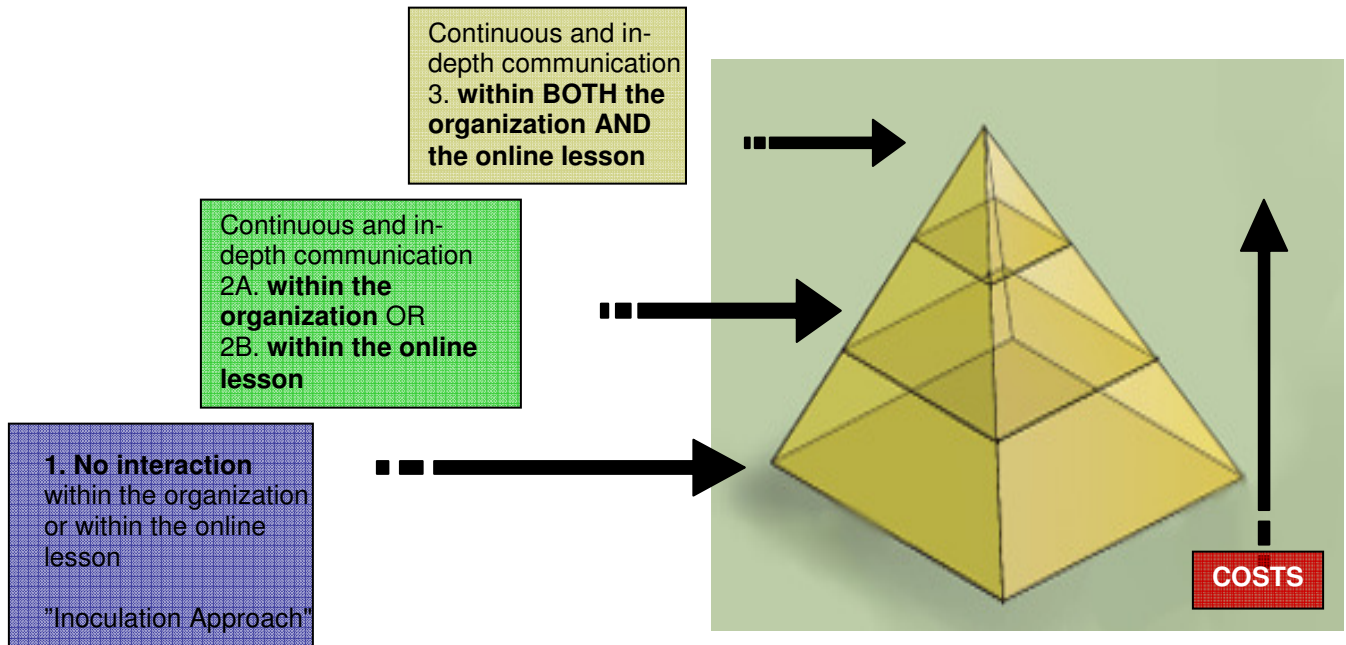
The use of the Web to provide training is not a new phenomenon. Large corporations quickly realized that the Web provided a method to deliver quality training in less time and at a lower cost. The American Society for Training and Development (2001) reported that "High-quality e-Learning creates an economic advantage for both individuals and organizations by improving 'speed to capability' or shortening the amount of time it takes to get workers up to speed on new products and processes." Training that used to take 6 to 9 months will be compressed to just two to three weeks, thus assuring faster time-to-market with products, and greater productivity. This creates a strong economic incentive for the business community to embrace e-Learning. In CIO Magazine, Mayor (2001) relayed a forecast from market analyst IDC that "e-Learning will account for almost half of the projected \$16.9 billion business skills training market by 2004." Bersin (2005) describes "rapid e-Learning, which is emerging as the fastest-growing category of online training. It is generally defined as Web-based training that can be created in weeks and is typically authored by subject-matter experts. Bersin & Associates research indicates that the category has grown 80 percent in just the past year and will likely reach a market value of 410 dollars million by 2006. Rapid e-Learning projects account for more than one-third of all current training-related projects and likely will comprise half of all e-Learning initiatives within the next three years."

Public libraries have lagged well behind the business and governmental areas in utilizing the Web to meet their training needs. The reason for this is not that librarians and library staff have less training needs. Darlene Weingand (1999), in speaking of the need for continuing education for librarians and library staff wrote, "Maintaining competence and learning new skills must be at the top of every professional's 'To Do' list. It is an ethical responsibility, to be sure, but also one that is pragmatic and critical for career success.... Continuing professional education is no longer an option; it is a requirement of professional practice."(p. 20) The most likely explanation of the lag for public libraries is that the startup costs for online training are considerable and public libraries often do not have the resources to front the development of the necessary courseware.

Recently, there has been a surge in the delivery of training in libraries through the use of the Web. The largest projects were based on grant funding that allowed for the development and delivery of quality online courseware. Most notable among these projects were WebJunction, funded by the Gates Foundation and Project LE@D funded by the Institute for Museum and Library Services. There are other agencies that are beginning to provide Web-based training to public libraries. Some of these projects have short-term evaluation built in that provides information on pre and post-test gains, completion rates, and attitude toward the lesson and format. However, there are no systematic and sustained efforts to investigate the long-term retention of knowledge and skills imparted through online training in public libraries. The first purpose of this study will be to provide data on the short and long-term impact on knowledge and skills of online lessons.

Assuming that the online training does facilitate the short and long-term retention of targeted knowledge and skills, an even more important question needs to be addressed. Is the actual practice by the librarians and library staff impacted? Rhea Joyce Rubin in her 2005 book "Demonstrating Results: Using Outcome Measurement in Your Library" states measure of successful training, "Changes in behavior and on-the-job performance quality, though not often assessed, are usually the real goals of training.... The long-range outcomes of training should always be changes in behavior or condition."(p. 99) As an example, if a lesson on dealing with disruptive patrons is taken and an incident occurs several months after the lesson, is there a difference in the way that the incident is handled? Measuring long-term impact is the type of assessments that public library stakeholders require to measure the impact of training initiatives.

As can be seen in Figure 1, the implementation of a Web-based training lesson can vary considerably as to the interaction around the lesson both within the library and within the lesson. Appendix AA provides examples of the implementation of a lesson at each of the levels. Because moving to higher levels involves additional costs, the method of implementation is an important decision that must be made within the library.



Online Lesson Implementation Continuum Figure 1

The results of this study will fill an important need on the part of the public library community to know the short and long-term impact of online training as well as to begin to understand the relationship of the level of implementation to this impact. Training implementation should optimize costs and strive to achieve highest return on investment.

Intended Results

The intended results will be a preliminary understanding of the short and long-term impact of Web-based training in public libraries. This will be in terms of knowledge and skills mastered, application of the knowledge and skills, and best method of implementing the training. The Commission on Technology and Adult Learning challenges public and private sector leaders to work together to “implement new measures and methods for assessing and certifying what individuals know and are able to do. Traditional, institution-based approaches to assessment and certification are not well suited to an e-learning world in which the focus turns from a record of classes taken and degrees received to measures of what an individual actually knows and is able to do.”(ASTD/NGA, 2001, p. 5)

Initiative to **M**easure **P**ersonnel **A**ssimilation of **C**omputer-mediated **T**raining (**IMPACT**) in Public Libraries is a one-year investigative evaluation and research project designed to study the impact of implementing Web-based training in public libraries. The results of *IMPACT in Public Libraries* will provide the foundation to public library administrators and training personnel for model implementation strategies that optimize implementation costs in terms of specific outcomes.

Impact

The results of this study will inform two communities. The first is the rapidly growing content providers. Decisions regarding interface design, content placement, communication tool inclusion, and the design of user manuals can be impacted. The second community includes all types of public libraries and library systems. There is considerable economic pressure to incorporate Web-based training in libraries. Furthermore, there is little or no guidance or a research-base upon which to support implementation decisions. The results of this project will assist those within the libraries as well as those who are involved in training for these libraries. A recent study of primarily public libraries indicated that 70 percent of the library organizations surveyed plan to use e-learning within the next three years. (Mason et al, 2006) Project *IMPACT* has the potential to impact these library professional development implementations decisions and inform the growing numbers of libraries seeking Web based training.

Diversity

The traditionally underserved group that will be most impacted in this study are the librarians and support staff in small public libraries. More than 59% of the public libraries in the United States serve populations of less than 10,000. (USDE/NCES, 2006) These libraries often have a small staff with limited training budgets. The size of the staff often precludes leaving the library to attend training, even if funds were available to support the travel and registration. Web-based training empowers this traditionally underserved population and the purpose of the study is to both validate and to provide information upon which this type of training can be designed and implemented.

Project Methodology and Evaluation Plan

Theoretical Basis for Study

The ultimate goal for any training effort is most often a change in practice. The library administration wants to see an improvement in the services provided by the librarians and library staff. While acquisition and retention of knowledge and concept is important, the ultimate goal of the training is "deep" or higher level learning (Atherton, 2003) and the ability to apply what is learned in a meaningful way to the work environment. Deep learning is characterized by the ability to analyze, evaluate and synthesize, and to apply knowledge gained to novel situations.

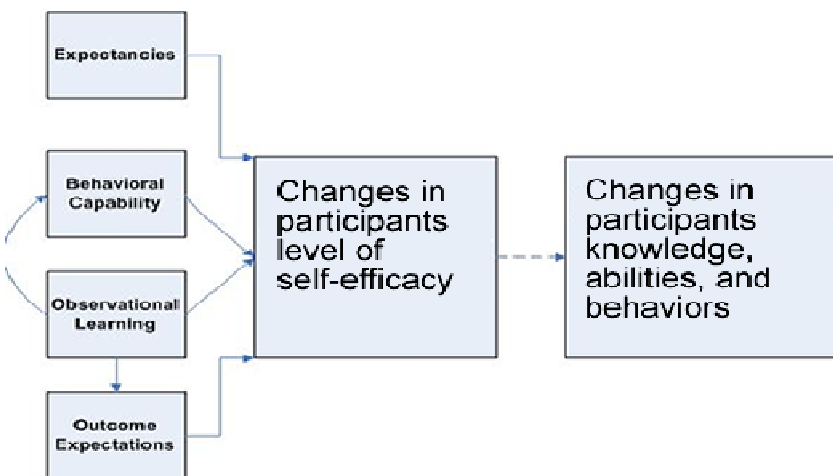
The library administration must also be concerned with the efficiency of the training used. While it may be intuitive that Web-based library training at the top of the Implementation continuum will be more effective than that at the bottom, what are the theoretical underpinnings of this intuition? Huang (2002) does an excellent job of listing, under the constructivist paradigm, several supporting constructs and theories.

Need for Interaction. Interaction is an essential ingredient of learning (Sherry et al, 1998). A high level of interaction can serve as a motivating factor (Rovai, 2004) as well as to reinforce learning. Moore (1989) emphasized the need for interaction and identified three types of interaction including student-to-content, student-to-student, and student-to-instructor.

Role of a facilitator. The often-heard description of the change in the role of a faculty member in technology-based instruction from "Sage on the Stage to Guide on the Side" often leads to the inference that the role of the instructional facilitator is somehow diminished. In fact, according to many theorists,

the role, though different, is still extremely important. The facilitator must create an environment where views can be shared (Porter, 1997), where risk is acceptable (Spitzer, 1998.), and where quality is ensured (Westera, 1999).

Self-Efficacy. Self-efficacy beliefs can be useful in understanding and predicting behavior. (Bandura, 1977). The level of self-efficacy when considering addressing issues in context has been evaluated in previous studies to assess the effectiveness of online training (Miller et al, 2003; Turner-Grievy, 2005). The model is adopted from the preliminary modeling of the relationship of self-efficacy development in



online learning from the findings of the Health Scholar's *Meatless Monday* program at Johns Hopkins University. The online training project for Public Libraries, headed by Brie Turner-McGrievy (2005) and implemented by project LE@D at the inoculation level, informs this project. The findings speak for the need for further research on the role that self-efficacy and varying levels of implementation may play in the return on investment of online training.

Authentic Learning. Linking learning to real-life situations is viewed as a critical aspect of higher-order learning (Bostock, 1998). To maximize the probability that learning will be applied in a particular environment, students should be encouraged and enabled to bring examples from their work experience into the learning situation.

Collaborative learning. To achieve higher order learning and, especially, the application of learning to "real life" contexts, many theorists believe that a social learning environment is crucial (Jonassen, 1994). Wenger (1998) introduced the concept of communities of practice, emphasizing the need for a collaborative learning in practice, "What they learn is not a static subject matter, but the very process of being engaged in and participating in developing an ongoing practice" p. 95.

The delivery of Web-based library training at the peak of the Implementation Continuum involves facilitation and interaction with a high probability of collaboration and authentic learning. This "high level" implementation, while more costly, contains the theoretical foundations that should ensure both higher acquisition of knowledge and abilities and the application of these in the work environment.

Research Questions

This project seeks to answer the following questions:

- Can Web-based training be an effective method for teaching knowledge and skills to public librarians and library staff? Is this effectiveness both short and long term?
- Is Web-based training an effective method of affecting the practices of librarians and library staff?
- Can the level of implementation of the training impact levels of learning involvement, content acquisition, self-efficacy, or practice? Are there significant gains in any of the methods of implementation?
- Is the size of the library related to the impact of the training?

Methodology

This research project will consist of three phases and utilize both quantitative and qualitative research methodologies. See Attachment: *Schedule of Completion*

Phase One

The population for this study will consist of the librarians and library staff that have participated in the "Managing Difficult Patrons with Confidence!" offered by Project LE@D lesson between September 15, 2007 and November 15, 2007. A purposive sampling process will be utilized for Phase One of the study. Based on the Implementation Continuum, public libraries that participated in Project LE@D will be selected that utilized each of the levels. Furthermore, libraries serving "small" and "average to large" populations will be represented at each level so that at least 50 subjects will be in each library category and in each level. See Figure 2 (below) for chart describing size categories.

Figure 2- Library Size Chart: "Small" or "Average to Large" Public Libraries

Classification	Population Served
Small	Less than 10,000
Average to Large	10,000 to Over 100,000

--Identification and Selection of Libraries.

The coordinator for Project LE@D will perform the initial selection of participating libraries. The criteria for this selection will be the size of the library, the level of implementation of the lesson, and the availability of subjects who can participate in the online training. The LE@D coordinator will contact the library directors to obtain permission to participate in the study. Placement of the libraries in an Implementation Continuum category will be validated by submitting the descriptions of the implementation practices to three instructional designers. All three instructional designers will have to concur in order for a library to be considered for the study.

A sufficient number of libraries will be selected so that there are at least 50 subjects who are willing to participate at each category of level of learning and of both library size categories with a total sample of 400 subjects included in the population sample. On site visits will be made to four library systems to insure consistency in completion of each sample at each level of implementation. In addition, the research assistant will provide implementation checklists and instructional materials for the library directors (or assigned branch library contacts) and gather contextual information and statistical data on each library and library system participating within the study. The names of libraries and subjects will be kept confidential. This project will follow the procedures and meet all requirements of the University of North Texas Institutional Review Board for the Protection of Human Subjects.

Phase Two

Delayed post-test. Between five and six months following the completion of the Web-based training lesson, the post-test will be administered again to all of those who took the training.

Surveys. During the post-test phase of the study, surveys will be administered to determine perceptions of the impact of the training on subsequent library staff/library user interactions. All original participants at each type of library and level of implementation will receive the survey. In addition, the immediate supervisor for each participant and library director will be given a survey.

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All libraries that used the Project LE@D lesson will be included in the Phase Two survey pool. The learning management system that is utilized by Project LE@D provides flexibility for implementation levels, and scholarships will be utilized to insure sufficient numbers of libraries participate in the selected lesson at each of the four levels of implementation. The goal of the survey portion of this study is to collect data from the participants and their supervisors to understand how the different levels of program training types (self-driven vs. highly interactive) impact the desired outcomes of the fiscal and staff time investment in the online training programs.

Data Analysis

A *post hoc* data analysis will be conducted around the following variables:

- Delivery Project
- Size of Library
- Level of Implementation of the Lesson (See Implementation Continuum in Figure 1.)
- Content mastery (as measured by pre and post test)
- Level of participant's learning involvement (as measured by time on task, content pages opened, discussion postings made, discussion postings read, email sent and email read, chat participation, URL's accessed, and glossary terms accessed.)

Two-way Analysis of Variance will be conducted on the Project LE@D data with Size of Library and Level of Implementation as independent variables and content mastery (pre to post, and delayed post test gain scores), completion and number of participants, self-efficacy, on-the-job behavior and learning outcomes application, and each measure of learning involvement as dependent variables. The survey results will be coded and analyzed to answer the research questions.

Phase Three

One of the primary goals of Project *IMPACT in Public Libraries* is to develop an e-training "levels of implementation" model and evaluation & assessment tools for use by public library administrators and other e-training stakeholders serving the Public Library community. The project will build upon findings of a thorough literature review and the theories and experience of other investigators offering similar e-training modules; analysis of e-training evaluation methods in other disciplines; the experience of University of North Texas staff statisticians and investigators; and the expertise of LE@D personnel. The implementation model and evaluation tools will align current theoretical approaches to the study of e-Learning implementation issues with a methodology for conducting evaluation and return on investment (ROI) of e-Learning participation.

In the final phase of the project the implementation model, evaluation tools, and the research findings will be made available on a project Web site and could be used by Public Library e-training stakeholders to optimize implementation strategies and measure the impact of staff development and continuing education e-training courses and programs. The LE@D Web site will serve as the major communications medium for the Project *IMPACT in Public Libraries*. In addition to disseminating the findings through the Web site, traditional channels such as professional conferences and publications will also be used.

Also in the final phase of Project IMPACT a Web cast presentation and secondary Web-based survey will be widely advertised through Library and Information Sciences electronic mailing lists, encouraging public library staff training administrators; directors of public libraries, heads of library and information organizations and associations; and e-Learning stakeholders to attend. The Web cast will publicize Project Impact's findings and tools, data will be collected on numbers attending the Web cast, and the

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secondary web-based survey will gauge interest in the results and seek to explore levels of interest in e-training implementation issues facing the Public Library personnel.

Based on the results of this online survey and issues that emerge, the researcher will gauge the level of interest and feasibility of developing national best practices guidelines for Public Library e-training programs and a Web based tool to allow public library staff members to track their continuing education training participation.

Project Resources: Budget, Personnel, Management Plan

Budget Percentages and Totals Before Indirect Costs:

We are requesting \$70,144.00 from IMLS to cover the costs (direct and indirect) for this research. UNT will provide cost sharing contributions in the amount of \$74,280.00. As principal investigator, Dr. Turner is responsible for overall project design and management, management of project funds, and staffing. UNT and CTLA will provide accounting and billing services for the project. The project will follow all appropriate UNT and CTLA administrative procedures related to staffing, payment of salaries, travel, and other aspects of the project where expenses will be incurred. Funding from IMLS will be used in following project cost categories:

- Project Manager. 10% F.T.E. IMLS 50% UNT 50%
- Project Coordinator for Project LE@D. 50% P.T.E. IMLS 50% UNT 50%
- Research Assistants/Course Facilitator 75% F.T.E. IMLS 50% UNT 50%
- Learning & Assessment Specialist 10% F.T.E IMLS 50% UNT 50%
- Statistical Services Support UNT 100%
- WebCast Conference IMLS 10% UNT 90%
- Travel- to Library Systems & IMLS Training IMLS 100%
- Travel to Conferences IMLS 50% UNT 50%
- Equivalent course scholarships & supplies IMLS 20% UNT 80%

Subtotal IMLS \$48,833 plus indirect costs with a total requested amount of **\$70,144**

Subtotal UNT \$52,923 plus indirect costs with a total cost share of \$74,280.

Appendix include Project IMPACTs Detailed and Summary Budget

Personnel:

Project personnel will consist of:

- Principle Investigator: Dr. Philip Turner, Vice Provost for Learning Enhancement and Center for Teaching Learning and Assessment Director
- Library Professional Development eLearning Support, Web Conference & WebCast Development Team Lead: Arlita Harris, Center for Teaching Learning Assessment Specialist
- Project Liaison with Project LE@D: Gary Werchan, Project LE@D Coordinator and Public Librarian
- Project Research Assistant and Training Facilitator: Teresa Dalston, LE@D Instructional Designer, Designer of Facilitator Training, UNT School of Library and Information Sciences adjunct instructor and doctoral student

Project *IMPACT*: University of North Texas Center for Teaching, Learning, and Assessment
Management Plan

Project activities combine into a set of project work areas, and the following table identifies and briefly describes these. The narrative following the table provides details on the duration of project activities.

WORK AREA	DESCRIPTION	DELIVERABLE
Project Management	Addresses activities and tasks to ensure the successful and timely completion of the project and its evaluation.	<ul style="list-style-type: none"> • A project plan with detailed tasking, scheduling, milestones, and anticipated deliverables • An outcomes based evaluation plan to assess the success of the project
Methodology and Procedures Research	Addresses the development of reliable and valid procedures for the research. Includes development of Web-based system to collect data, development of assessment tools and surveys and the coding to convert data to numerical score, identification of appropriate statistical methods, and documentation of metrics. Experience from the 2005 LE@D study conducted by Turner-McGrievy as well as knowledge from thorough literature review of assessment methodologies will inform these methods and procedures.	<ul style="list-style-type: none"> • A detailed research design, methods, and procedures document • Identification of library and documented sampling procedures and implementation requirements at each level of implementation • Delivery of survey tools and testing methods for optimal assessment of e-learning and the return on investment for professional development and training of library staff.
Implementing and Measuring E-training Implementations	Addresses a collection of activities for delivery of online training at each level and specifies tasks and activities for gathering data at each level within both large and small libraries.	<ul style="list-style-type: none"> • Delivery of Web-based training administered in four control groups according to prescribed set of variables to 400 participants.
Methodology for Identifying Factors Affecting Return on Investment (ROI) of Web-based Training Implementations	Addresses a range of activities for preparing and analyzing data in order. Tests appropriate methodology to identify assessment procedures and methodologies for the data collected at each level of implementation for each sample population. Reports methods for documenting the return on investment at each level of e-training implementation.	<ul style="list-style-type: none"> • Data Collection and Analysis Toolkit to include software requirements, documentation of methodology, roles and responsibilities, IRB approved survey and assessment instruments, and coding and statistical analysis tools for analyzing data. • ROI Measures and Self Efficacy Grids, Learners Perceived Effectiveness over Time, and other graphical representations of data and statistical analysis.
Identification of Roles & Duties of Key Stakeholders for Optimum ROI	Addresses activities at various levels of online training implementation to identify a set of core	<ul style="list-style-type: none"> • An analytical report indicating possible sets of best practices and core responsibilities of stakeholders in online training.
Project Evaluation	Addresses activities related to monitoring the progress and assessing success of the research project.	<ul style="list-style-type: none"> • Interim reports to IMLS to indicate project progress • Final evaluation report to assess accomplishments and outcome.
Dissemination of Results and Tools	Addresses activities to insure communication of findings and putting e-training ROI methods and tools at the disposal of library administrators and other e-training stakeholders. Also, includes investigating interest in establishing standards and best practices in the delivery of e-training for Public Library personnel.	<ul style="list-style-type: none"> • Published findings and presentation at professional conferences • Web Cast presentation of Project IMPACT's results • Web site archive of tools, documents, and findings.

Duration of project: September 1, 2007-August 31, 2008 (Libraries will have used the lessons between September 15, 2007 and November 15, 2007. Delayed post-tests and interviews will take place 5-6 months following the completion of the lessons.)

The first step of the project, to be completed by September 15, 2007, will be the identification of the set of libraries that will participate in the study and dispersal of scholarships for participants. These libraries will be identified as per the description in the methodology section and permission secured from both the directors and participating staff. From September 15 to November 15, the participants will complete the course. A schedule of delayed post-tests and survey questionnaire will be created during this period so that they will be administered between five and six months after the lesson. By September 30, 2007, the research portion of the Project LE@D Web site will be created and then updated throughout the project.

The delayed post-tests and surveys will take place between March 1, 2008 and April 15, 2008, with the data analysis completed by June 30, 2008. The research report will be completed by July 15, 2008 with presentation and article manuscript preparation commencing on July 15th and continuing past the end of the project. Phase Three dissemination of the results, Web cast presentation, and assessment of interest through secondary survey will occur in early August 2008. Secondary survey results will post end of August when Project *IMPACT in Public Libraries* is slated to end, but Web site will continue to be a clearinghouse of tools and methods for assessing ROI on web-based professional development courses and results of survey information.

The proposed personnel have extensive experience in survey research projects. They have managed large-scale production and dissemination projects in the area of online learning in libraries, including Web cast conferences and traditional conference presentations.

Dissemination

Project deliverables will be the form of documents, assessment tools, and a research findings to inform best practices. Disseminating activities will be a high priority. From its inception, Project LE@D has utilized a robust and frequently visited Web site to meet the information needs of potential and actual users of LE@D lessons. This Web site will host a separate section to provide regular updates to the research project and to enable early dissemination of results.

In addition, project staff will prepare and present papers at appropriate conferences such as the American Library Association, the Public Library Association, and EDUCAUSE Conferences. Articles reporting the research results will be prepared for submission to library and information science scholarly and professional journals, including *American Libraries*.

Finally, Project IMPACT will participate in a UNT Center for Teaching, Learning, and Assessment and LE@D facilitated Web-cast conference on the use of the Web to deliver professional development training. Placing the assessment tools and project documentation in the hands of public library e-training stakeholders is a primary outcome of this project, as is the enabling open communication of issues of implementing professional development for public library personnel. A Web cast session disclosing the findings, making the tools available, and soliciting profession community input is aligned with these outcomes.

Sustainability

Sustainability for this research project can be assessed in terms of the wide-ranging access to project findings and the delivery of e-training assessment tools created by this project. Findings and deliverables for the research study will be publicized on the professional electronic mailing lists and made available through the project Web site, publications, and Web cast.

In addition, sustainability can also be viewed in terms of the impact on the professional community and the emerging training practices of public library staff. The use of Web-based training has increased dramatically in the past few years and is expected to increase even more dramatically for public library staff in the next three years. Project IMPACT has the potential to be a vehicle for lasting and methodical change to the e-training practices in Public Libraries and to ease the burden of justification for e-training costs by providing administrators assessment tools to measure e-training return on investment.

The use of Web-based training has increased dramatically in the past few years. However, evaluation of the impact of this training and, more importantly, the relationship of the method of implementation of the lesson is still in its infancy. This research project will provide a methodology that can be utilized by the increasing number of content providers and by the end-user libraries to guide their implementation decisions. The tools created during this project will provide a metric for e-training participants' learning outcomes to be measured in terms of application. These tools could help managers measure ROI and provide a validated assessment of what participants do on the job with their newly acquired knowledge. This project will lay a foundation for communication of issues in Public Library e-training issues and serve as a catalyst for continuing research into best practices and standards for e-training in Public Libraries.