Lessons Learned: How We Struggled Through This Effort

Web-Based Hazmat Awareness Course
Rail Workers Hazardous Materials Training Program
George Meany Center-National Labor College

The George Meany Center for Labor Studies was originally established in 1969 to provide education and training to staff and officers of the AFL-CIO and its affiliates. Since its inception, over 120,000 unionists have passed through the Center's labor education classes. Also during this period, several hundred union men and women received Bachelor's Degrees in Labor Studies through the Center's partnership with Antioch University. Recently, the George Meany Center became accredited as the National Labor College to increase access to higher education for labor union members. With this June's graduation, the National Labor College will have conferred Bachelor's degrees, and this year for the first time, Master's degrees, to over 300 unionists. While campus-based training remains a priority, future plans for the George Meany Center-National Labor College (GMC-NLC) include the addition of a new building, a "technology" center, which will house high-tech conference rooms and classrooms and the goal of providing even greater access to education for union members through distance learning.

The distance learning effort began in 1999 when the Center's Rail Workers Hazardous Materials Training Program received supplemental funding from NIEHS to use Advanced Training Technologies (ATT) to develop web-based hazardous materials training for rail workers.

The urgent need for rail workers to receive this training is evidenced by the high volume of hazardous materials shipped by rail -- 378,916 tons shipped per day (or

138 million tons shipped annually), and by the increase in the overall railroad accident rate to 3.77 in 1998, 3.89 1999, and 4.01 in 2000. (FRA, Normalized per the number of accidents per million train mails) This is the first consecutive three year increase in train accident rates in over a decade. The need for training is further highlighted by the results of a recent survey of past training participants of the rail program indicating that 49% or almost half of the respondents had no prior hazmat training from any source.

Industrial, financial, and geographic roadblocks contribute to the limited distribution of classroom-based training. To date, we have supplied hazardous materials training to only a little over 13,000 rail workers, representing less than 10 percent of the targeted population. Therefore, to increase access for rail workers who are at risk of occupational exposure, an 8-hour hazardous materials course for first responders at the awareness level was converted from classroom to web-based training.

Even though evaluation results indicate the success of the pilot as "an excellent model for creating an effective and accessible online training program", actually achieving "model" status was a struggle. This presentation will highlight a few of the "struggles" we encountered in the development, design, and delivery of the pilot project, as well as some of the lessons learned along the way.

Challenges, Barriers, Constraints:

Course Development

The first step in the process was to establish a steering committee, or team, to develop the in-house project. An ATT steering committee of hazmat program staff and instructors, peer trainers, and educational design staff was created. The mission of the group was to focus on core values of peers working together to solve problems, using peer trainers, and sharing of experiences as well as to provide the expertise and guidance necessary to convert the six modules of an awareness level hazardous materials course to an online format. This is where we encountered our first major challenge. Not one member of this team had any practical experience in the design, development, or delivery of an online training course. WebCT was the predetermined design platform and developers were unfamiliar with this software package. The lack of experience with any web-based applications impacted other phases of the project, and created a "learn as you go" type of approach to the process.

Lessons Learned: An important lesson learned here is the value of involving experts at the beginning of a project to guide the different phases of developing an online training course. An ideal framework uses the team concept and includes expert assistance in developing and delivering online training.

Courseware

The consensus of the development team's evaluation shows that the selected courseware, WebCT, offered a constant source of challenges, barriers and constraints in the development, design and delivery process. WebCT is widely used by colleges and universities, and offers a set of web-based course tools that allow educators to build sophisticated Web-based learning environments without a lot of time, resources, or technical expertise. Our project certainly fit within those parameters, so initially WebCT seemed a good fit for us. We quickly learned that

WebCT has a very steep learning curve, and each day brought a new learning experience. Eventually, we were able to use the strengths of the WebCT courseware to produce an accessible and effective online course.

Lessons Learned:

Select software/hardware/technology to suit the needs of the learning design: What are the goals and objectives of the learning experience? Are features included that provide interactivity between instructor to student, student to instructor, and student to student? Is it easy to use? Adequate technical assistance? Technical limitations? Seek expert advice in the selection of appropriate software/hardware/technology, and select only that which is appropriate for the learning design. Allow time and training for course developers who need some familiarity with courseware.

Converting Pre-existing Course Materials to Online Format

Converting six print module of existing program content to an online format represented several challenges and barriers to the development team. In addition to course content for specific topic areas, each of the six course modules includes an overview of subject matter and learning objectives, as well as bulletin board assignments to stimulate interactivity among students and trainers. There was a large amount of text to which had to be converted to an online format. 'Fitting' the materials into a pre-selected and limited package presented somewhat of a challenge. Time constraints were an over-riding issue here, further exacerbating the situation.

Lessons Learned: When converting to an online format, text should be divided into at least two categories: need-to-know, and nice-to-know. Need-to-know information, obviously, is what needs to be included to meet regulatory

requirements, while the nice-to-know information is provided to participants in pop-up windows. These pop-ups provide a more in-depth coverage of a topic, and provide illustration of concepts using charts and graphs. External links are located throughout all six modules and provide students with immediate access to external sources for valuable resource information, i.e., MSDS, New Jersey Fact Sheets, OSHA web site, DOT Hazmat Regulations, etc. Using pop-up files and external links individualize training for students by providing tools for them to construct their own learning.

Graphics: To Use or Not to Use

The trade-off between graphics and download time was a continual subject of discussion. In places, the text was dry and technical and in need of graphics, both for text clarification and to sustain general interest. However, in consideration of download time required of students accessing the course on older equipment, the team sought to find an appropriate balance.

Lessons Learned: Again, the use of pop-up windows for charts and graphics can replace some of the need for graphics within the main text, and decrease download time for the end user. We also chose a font that seems more "friendly" and eye-appealing than a traditional font. As a postscript: download time was not an issue for any of the students who participated in the pilot project.

Bulletin Board

The bulletin board is a place for posting questions, comments, and module assignment posts. The courseware, WebCT, uses "forums" to separate topics areas on the bulletin board. Peer trainers serve as online facilitators and monitor bulletin board discussions, answer questions, and provide timely feedback to students. However, within WebCT, it is a very difficult task to access an appropriate forum,

so most students post in the default forum. During the pilot, the bulletin board quickly became very unorganized.

Chat Rooms

In addition to the Bulletin Board, chat rooms can be a used as an interactive tool for formal and informal discussions on specific topics or issues. Conversation in chat rooms can be recorded and used as a reference document, or course record. Since chat rooms use a real-time, or synchronous, format, schedules for specific chats are posted on the bulletin board, and peer trainers assigned to cover the schedule. This was where we encountered our first real barrier. The chat room didn't work; the chat server was down during most of the delivery phase of the pilot project.

Lessons Learned: Because the chat server was down, we had to depend upon bulletin board communication and activities to stimulate interactivity among students and peer instructors. We actually learned several lessons here. First, because of geographic constraints, round-the-clock work schedules, and personal/family schedules of this target population of rail workers, the pilot cohort could not predict times when they could be available for chats. We discovered the bulletin board communication worked far more effectively for this group because of its asynchronous format which allowed students to participate when individual schedules permitted.

We also found that even though the bulletin board was cluttered and disorganized, students and trainers generally followed threaded discussions when posting, and showed evidence by their posts that they had read the bulletin board contributions of their peers. The participation of hazmat peer trainers has been essential in the development and design of the on-line course and, more importantly, in their role as

on-line course facilitators. Hazmat peer trainers pose questions to participants, respond to their questions, and encouraged story telling, which increases the interactivity and sense of community with and among the students. WebCT includes an email feature which allows private communication between peer trainers, instructors, and students, but it is seldom used.

Participants who completed the on-line course were invited to attend 4-day hazmat training at the George Meany Center campus in Silver Spring, MD. In October 2000, 16 online students participated in the 4-day course and, as part of the pilot evaluation, the group also participated in individual interviews and focus group discussions about their online experiences.

Overall, students reported a greater overall computer proficiency and knowledge of computer and Internet resources, and they felt empowered to change workplace conditions because of their new-found access to health and safety information and training.

The pilot has been successful in increasing training opportunities for rail workers who would otherwise not have the opportunity to receive hazmat training. The pilot was successful in providing these rail workers with an awareness of the risks of hazardous materials in transportation as well as the skills necessary to access important health and safety information.

Future plans for the online training course include peer-assisted training for Navajo and Spanish-speaking track workers on remote production gangs, and a Spanish version of the online course.