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THE IMPACT OF WEB-BASED TUTORIALS IN ONE CORPORATION'S
TRANSITION TO A BLENDED LEARNING ENVIRONMENT

by

Michelle A. Boyd

A Project submitted to the faculty of

Brigham Young University

In Partial Fulfillment of the Requirements for the Degree of

Master of Science

Department of Instructional Psychology and Technology

Brigham Young University

February 9, 2008

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a project submitted by

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This project has been read by each member of the following graduate committee,
and by majority vote has been found to be satisfactory.

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ABSTRACT

THE IMPACT OF WEB-BASED TUTORIALS AND SIMULATIONS IN ONE CORPORATION'S TRANSITION TO A BLENDED LEARNING ENVIRONMENT

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Master of Science

ELM Resources, a not-for-profit, mutual-benefit corporation, provides web-based transmission and data translation services for student loan data between loan providers and schools/universities. This corporation has a relatively new training staff of five to seven employees and over 1,800 client organizations. Because of the heavy demands placed on the training staff, ELM training administrators sought alternatives to their current training program of onsite training and web conferencing. Blended learning was identified as one possible solution. In this project, blended learning is defined as using a combination of face-to-face training and technology-delivered training. By adding web-based, on-demand tutorials, along with other training media, ELM hoped to increase access to training while keeping costs low. This project explores the impact of these tutorials on ELM and its clients. Reported are an interview with the Director of Training and several surveys distributed to school staff, lenders, and ELM training specialists. A critique of the project addresses the need for future research to collect performance data.

Evaluation results indicate that the changes to the training program have established a positive relationship between ELM and its clients, and have given ELM a definite competitive edge. The advantages especially noted in the evaluation results include the usefulness of the tutorials as both a reinforcement of previous training and a self-testing tool, their brief and highly visual format which teaches one process at a time, and the convenience in accessing and using the tutorials. Disadvantages include the tutorial's inherent impersonal nature, the loss of the ability to ask questions, and lack of optional narration. This paper discusses unanticipated benefits to the trainers, such as the use of the tutorials within face-to-face training sessions, and to other ELM staff members, including Help Desk personnel. The decrease in training-related Help Desk calls after the introduction of the training changes suggests a positive impact on learning.

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Table of Contents

Introduction.....	1
The Company.....	1
The Instructional Problem.....	1
My Role	2
Objectives	4
Description of the Human Resources at ELM	4
Description of Basic Training Procedures at ELM.....	5
Literature Review.....	7
A Definition of Blended Learning	7
A Comparison of Web-Based Training and Face-to-Face Training.....	8
The Features of Non-Blended Web-Based Training	8
The Strengths of Web-Based Training and Weaknesses of Face-to-Face Training.....	9
The Strengths of Face-to-Face Training and Weaknesses of Web-Based Training.....	12
Blended Learning Environments	16
Strengths of Blended Learning Environments.....	16
Individualized instruction.....	17
Social interaction and structure.....	18
Access to information.....	19
Cost.....	20
Impact on teaching and learning.....	21

Challenges of Blended Learning.....	21
The Core-and-Spoke Approach of Blending	23
The Web-based Portion of the Blended Learning Environment.....	24
Simulations in Training.....	24
Information about Captivate	25
Creating tutorials in Captivate.....	25
Advantages.....	26
Disadvantages.....	27
Product Description	29
The Structure of the Tutorials.....	29
The Tutorials in the Context of ELM's Training Program.....	31
The Development of the Tutorials	32
Evaluation of the Project.....	36
Description of Target Audiences	36
Instruments.....	37
School Staff Survey	37
Lender Survey.....	38
Training Specialist Survey.....	38
Protocol for an Interview with the Director of Training.....	39
Procedures.....	39
School Staff Survey	40
Lender Survey.....	40
Training Specialist Survey.....	40

Interview with the Director of Training.....	40
Results.....	41
School Staff.....	41
Lenders.....	43
Training Specialists.....	44
The Director of Training.....	47
Critique	51
Benefits to ELM Resources and Clients	51
Limitations	55
The Creation Process	56
Future Directions in Training at ELM	57
Conclusions.....	59
Schedule.....	59
Budget.....	60
References.....	62
Appendix A.....	66
Demonstrations	67
Simulations	70
Recent Changes to the Training Tutorials	73
Appendix B.....	76
School Staff Survey and Feedback	77
Lender Survey and Feedback.....	80
Trainer Survey and Feedback	83

Interview with ELM Resources' Director of Training, Alice C. Boyd 90

Introduction

The Company

ELM Resources, located in Oakland, California, is a not-for-profit, mutual benefit corporation, established by a group of lenders in 1994, including major banking institutions such as Wells Fargo, Bank of America, Chase, and Citibank. ELM provides a data transmission and translation system (ELMNet) over the Internet that sends information about federally-funded and private student loans from financial aid administrators at universities, colleges, and vocational schools to lenders, servicers and guarantors (known collectively as members or simply lenders), and vice versa.

Lenders tend to use the CommonLine standard to process their data. CommonLine is a standardized and automated format used by lenders in processing student loans created and maintained by the National Council of Higher Education Loan Programs (NCHELP). Many schools, however, use other formats than CommonLine to transmit data, as suits the particular needs of that school. Therefore, when one organization tries to send information to another organization, the other organization is unable to access it.

ELMNet acts as a go-between that converts the information so both the school and the lending organization can access it easily, avoiding the need for paper-based data and allowing the administrators and the lenders to process students' financial aid in a quicker and more efficient manner.

The Instructional Problem

With a very small number of training staff serving 1,500 client schools and 300 lenders, the director of training was concerned about the effect the heavy demand for

training would have on her staff. With the number of companies, coupled with increased demand for training, it would be difficult to adequately train all the staff requiring training from all the client companies without additional training resources. At the time this project began, the training staff provided face-to-face (F2F) training with some training via web conferencing (WebEx). Therefore, ELM began looking for alternatives to F2F training.

My Role

I acted in a supporting role as an instructional designer during the course of this project, working directly with ELM's director of training, Alice Boyd, under the supervision of Chloe Soroquere, vice president over marketing and training at ELM, and Dr. J. Olin Campbell at Brigham Young University.

Initially, the director and I discussed potential solutions, including the possibility of using Flash to develop tutorials on different ELMNET processes with a presentation of the process and a separate interactive tutorial. However, the training staff wanted to keep costs low and therefore, create the tutorials in-house and without hiring a programmer. This made a difficult-to-learn application such as Flash impractical. Also, the training staff felt that "going too high-tech" would not work with their particular audience. However, the director liked the idea of presentations and interactive activities.

I then presented the director with examples of web-based tutorials. These were short interactive demonstrations that I had designed for a BYU Independent Study course on Microsoft Excel and PowerPoint for business majors. The tutorials were created in Macromedia Captivate, lasted five minutes or less each, and presented the student with important processes in Excel and PowerPoint. Because of deadlines and the ease of

learning and working with Captivate, I had also assisted staff at the Center for Instructional Design in their production, as well. The director, upon viewing the examples I sent to her, approved the use of Captivate or a similar application to create the tutorials.

The format that we agreed upon for the tutorials, therefore, was an online library of demonstrations of specific procedures lasting about two to five minutes, as well as interactive tutorials that allow learners to practice the process and receive feedback as they go.

I also compared and made recommendations on authoring software applications. To make an comparison, I searched the existing literature on these applications (see Literature Review) and discussed the options with experienced programmers. The decision to create the tutorials in-house to keep costs low meant that rather than developing the tutorials myself, I would train the director of training in the use of Macromedia Captivate (having learned this previously during the Independent Study project) and she, in turn, would train the other staff members. The staff, including the director, was then able to create the tutorials. Specific information on the creation process can be found in the Product Description section under the interview with the director of training. During the creation of the first tutorials, I was available to answer questions about Captivate. I provided further training (on sound editing in Captivate) to the director when she expressed interest in adding narration to the tutorials.

Shortly after the first tutorials were deployed, I reviewed and provided feedback on them, including on their length, pacing, and navigation. This feedback was used to make adjustments to the tutorials and guide the creation of further tutorials.

I also created evaluation instruments to address the objectives below. Further information on these instruments will be found in the Evaluation section and Appendix B.

Objectives

The main objectives of this project were to

1. Determine what impact the web-based tutorials on the training staff (e.g. whether they use/refer to the tutorials in their training, training demands, etc.) and on ELM as a whole,
2. Determine the general attitude learners have towards the tutorials and whether this prompts the learners to use the tutorials as a resource,
3. Compare the role of the tutorials to other parts of ELM's training program.

Description of the Human Resources at ELM

In February 2005, the training staff consisted of one training director and three trainers. One additional trainer was added in mid-year and two more at a later date. ELM's total staff, at that time, consisted of eighty employees.

ELM's 2006 Training Report (Boyd, 2006) states, "The training department was created in February 2005, with three trainers and one training manager. [*The ELM training staff's*] task was to create training and documentation to train schools, lenders, servicers and guarantors, and ELM staff on working with ELMNet. In June 2005 we added one additional trainer, for a total of four. We added two more trainers in April 2006. We now have a staff of six trainers."

The report continues, "The training department is organized regionally, and each trainer is assigned a specific territory of states. As each training request comes in, the trainer responsible for that state responds to the request, contacts the requestor, and

schedules training. Trainers cover each other's territories as needed." The regions covered by each trainer are shown in Figure 1. Note that this map was created in September 2006, after the addition of several staff members. The regions covered by each trainer at the beginning of the project were even larger.



Figure 1. Map of areas covered by each trainer in September 2006. Courtesy ELM Resources.

Description of Basic Training Procedures at ELM

School staff who are new to ELM are trained initially through videoconferencing within five days of the implementation of ELMNet at the school site, and onsite within sixty days. Afterwards, the staff is trained upon request. The initial training is two to three hours, and covers ELMNet basic functions. Written materials include an ELMNet training manual and a School User Manual which contains in-depth information on each feature and function. The ELMNet system does not include any online Help modules or

any hover text or popup notes that provide information or tips on using the system. Face-to-face training is provided to lenders upon request. Training provided to ELM staff includes training on ELMNet, customer service training, management training, and training on other systems used by the staff, including MS Office and time tracking systems.

The biggest challenge faced by the new training department in its first year of existence was to provide training to staff at over 1,500 schools, over 300 lenders, servicers and guarantors, and ELM staff, while creating training materials and documentation. The ELMNet system is not intuitive, and staff at existing schools had not been consistently well-trained before the establishment of the training department. The director of training concluded that web-based training would be necessary as one of the training methods to meet this challenge.

Literature Review

This literature review will begin by exploring and comparing blended learning, web-based training, and face-to-face training. To make a distinction between blended learning environments and purely Web-based or face-to-face training programs, a definition of blended learning will be given. Then, non-blended web-based training and non-blended face-to-face training will be compared. Blended learning, including its strengths and weaknesses and some approaches to blending, will be explored. Finally, two other subjects—simulations in training and the software application used to build the tutorials—will be addressed.

A Definition of Blended Learning

The approach that the training staff at ELM decided to take to address the challenges at hand after having consulted with me was to transition from using face-to-face training (F2F) and web conferencing almost exclusively with only a training manual as support materials to a blended-learning environment (BLE).

What is a blended-learning environment? Driscoll (2002, p. 54) notes that there are several different definitions of blended learning. Two of these include “combin[ing] or mix[ing] modes of web-based technology (e.g., live virtual classroom, self-paced instruction and collaborative learning, streaming video, audio, and text) to accomplish an educational goal” and “combin[ing] any form of instructional technology (e.g., videotape, CD-ROM, web-based training, film) with face-to-face instructor-led training.”

Rossett and Frazee (2006, p. 2) add that it “integrates seemingly opposite approaches, such as formal *and* informal learning, face-to-face *and* online experiences, directed paths *and* reliance on self-direction, and digital references *and* collegial

connections...” According to Osguthorpe and Graham (2003, p. 227), “it’s more than showing a page from a website on the classroom screen. And it all comes back to teaching methodologies—pedagogies that change according to *the unique needs of learners*” (emphasis added). In this project, face-to-face training was blended with web-based tutorials (with Webconferencing, podcasts, job aids, and other methods included in ELM’s overall blend), consistent with Driscoll’s second definition.

The overarching objective in all of this is, according to Rossett and Frazee (2006, p. 2), “to achieve individual *and* organizational goals” by, as Osguthorpe and Graham (2003, p. 227) state, “trying to maximize the benefits of both face-to-face and online methods—using the web for what it does best, and using class time for what it does best.”

A Comparison of Web-Based Training and Face-to-Face Training

But why use a blend at all? Why not stick with traditional face-to-face training or turn to an all-online model of training? What might blended learning give us that one single approach might not? To explore this issue, this section of the review will look at face-to-face (F2F) training and web-based training (WBT) separately. After a short introduction to the historical context of WBT, the strengths of WBT and the weaknesses of F2F will be examined. Then, the opposite scenario—the circumstances where WBT falters in comparison with F2F—will be addressed.

The Features of Non-Blended Web-Based Training

According to Bersin (2004, pp. xv-xvi), training that would be entirely online was indeed seen as a future direction in instruction when web-based training was new. It was seen as the way to go and he states that, “people rushed to put as much content as possible onto the web.” However, there were problems with Web-based learning without

traditional face-to-face learning. Bersin continues, “web-based training alone is not appropriate or sufficient for all problems. In some cases it is a breakthrough, extending the reach of training to people never before able to attend a class. In other cases it costs thousands of dollars and sits on the virtual ‘shelf.’” In other words, web-based training has both its strengths and weaknesses and the same can be said of face-to-face training.

The Strengths of Web-Based Training and Weaknesses of Face-to-Face Training

First, let us turn our attention to the strengths of web-based training. According to Horton (2000, p. 19), web-based training (WBT) excels when the content to be taught is “precisely defined objective knowledge.” This includes step-by-step procedures. Besides “ideal” content, Horton (2000, p. 18) states that there are learners for whom WBT is ideal. He proposed a list of qualities that such a learner would have, including: independent learners who see learning as a positive experience, are self-disciplined, enjoy working alone, possess basic computer skills, must gain new knowledge now but are unable to be trained through traditional training, have goals that are definite (such as performing a specific task), and have some elementary understanding and experience in their field.

Cost can be a major plus for WBT. “Reduced overall cost is the single most influential factor in adopting e-learning,” says Kruse (2004, p. 1), though he admits that *initial* development costs can be large. Horton (2000, pp. 20-21) and Kruse (2004, p. 1) cite instructor’s salaries, meeting room rentals, classroom supplies and equipment, travel (including lodging and meal costs), and time away from jobs as contributing to the costs of face-to-face learning.

F2F training, on the other hand, can be very costly overall. “Typically, instructor-led programs are higher in cost,” says Bersin (2004, pp. 87, 144), “due to travel expenses and instructor salaries...Learners must devote a significant amount of personal and business time...Instructor-led training (ILT) is the most expensive, time-consuming, and difficult-to-schedule form of training today.” For example, at ELM, an average face-to-face training session costs \$460 (excluding trainer salaries). ELM does not bill the client back for training. Therefore, if each client needs multiple training sessions, dependence on F2F alone could be an expensive option for a small organization like ELM.

One other challenge to F2F training is a lower level of scalability. Lockwood and Gooley (2001, p. 97) define scalability as “the capacity of a system to accommodate expansion, for example its capacity to accommodate additional students or additional courses.” This can translate into much higher costs as one adds more students. Bersin (2004, pp. 144-5) remarked, “If you need to train thousands of students, there are only two options: large class sizes or lots of travel. Large class sizes greatly reduce effectiveness and travel is very expensive.”

Yet another challenge is, according to Bersin (2004, p. 2, 144), long deployment time. He continues, “ILT [*instructor-led training*] demands that you schedule a scarce resource (instructors) across a large audience. This scheduling process make program rollouts long (months to years) and often makes ‘fast deployment’ training problems impossible to solve. ILT is expensive for learners because it demands that they travel and spend many hours away from their work.” At ELM, this has been cited as an important issue. F2F (face-to-face) training involves a trainer fitting travel into their schedule,

booking flights, accommodations, and so on, and arranging a time and place for training. Web conferencing has a lowered level of scheduling issues, but some still exist.

Bersin (2004, p. 3) concludes, “Technology is intended to solve these problems (*lack of scale and long deployment times*): extend the instructor model in time and space. Theoretically, if we use technology we can reach more learners in a shorter period of time—and as a bonus they can learn at their own pace and speed.”

Both Horton (2000, p. 28) and Kruse (2004, p. 1) note the ability of e-learning to be self-paced as another advantage. “Advanced learners are allowed to speed through or bypass instruction that is redundant,” says Kruse, “while novices slow their own progress through content, eliminating frustration with themselves, their fellow learners, and the course.” He asserts that this contributes to less stress and more satisfaction.

Finally, ELM’s director of training points out that F2F training is not available 24 hours a day, 7 days a week, and that when learners leave, they may go away with their memories, notes, and handouts but they cannot repeat the full experience without significant additional cost to ELM. “On-demand availability” is often an advantage with WBT (Kruse, 2004), allowing learners to receive training almost anywhere and any time. “With WBT, learners can get training right when they need it,” says Horton (2000, p. 28), “With self-directed WBT, learners do not have to wait for a class to form, and they can proceed at their own pace. When a need arises, they can learn what they require.” Kruse (2004) adds that learners can often go back to the materials, stating, “Confidence that refresher or quick reference materials are available reduces burden of responsibility of mastery.”

The Strengths of Face-to-Face Training and Weaknesses of Web-Based Training

However, several years after the e-learning trend began, problems with Web-based learning have surfaced, along with the benefits. In some cases, F2F training is the best (and perhaps even the only) way to teach. Bersin lists the following as some examples:

1. “Learners are being introduced to brand new material and have no prior experience with the topics. When learners are very new to the organization, topic, or material, they often cannot ‘teach themselves’ through self-study.”
2. “Culture building needs are high. When the program must create relationships and introduce company culture, (*instructor-led training*) is often the best way to go.”
3. “Experts in the field are available and able to teach.”
4. “Direct interaction and discussion with peers and discussion is primary to the learning process.” (2004, pp. 144-5)

Implied in Horton’s (2000, p. 19) view that WBT excels at teaching “precisely defined objective knowledge” and that there is an ideal WBT learner, is the idea that there may be types of knowledge that are less effectively taught in a WBT format and that there may be learners for whom WBT is less than ideal. “Complex physical/motor or emotional components,” according to Kruse (2004, p. 2), are examples of the former. In regards to the latter, Horton (2000, p. 18) admits that, “New technologies and techniques are not for everyone.” Ladyshevsky (2004, p. 3) suggests that WBT learners may already “possess a higher degree of autonomy and motivation from their counterparts who select

FTF courses.” If learners who see learning as a negative experience, are not self-disciplined, don’t enjoy and/or have difficulty working alone, lack basic computer skills, and have little or no experience in their field—the antithesis of Horton’s ideal WBT learner list—WBT may not be such an ideal experience.

Time issues are also a major concern. “As this growth (*in e-learning*) occurs, however, a realization is taking place. The big savings in travel and instructor costs are largely over. It is no longer enough to ‘put our content on the web’ to save money and reach more people,” Bersin (2004, pp. xvi-xvii) states, “...According to a recent study we completed with more than 1,200 training managers, the biggest challenge companies still face is ‘getting learners to take online courses.’” The reason for this, he says, is that workers simply do not have time in their day to take many hours of training online.

According to Moran and Allerton (2002, p. 381), learners are often asked to complete web-based training either during or after work hours. “Both options can present a problem,” they state, “employees don't like interrupting job tasks, and they don't want to feel they're working for their employers 24/7 by learning job skills after hours.” Bersin (2004, p. xvii) states that the nature of e-learning makes it “very easy to ‘opt out of’ ... There is no ‘getting away from the office’ to join an e-learning course. There is no ‘class’ to chat with. It is very easy to disengage.” Ladyshevsky (2004, p. 3) also cites “increased emotional detachment” as a downfall of WBT.

According to Bersin (2004, p. xvii), WBT also lacks the interaction with instructors and fellow students that one would find in a traditional face-to-face setting. Bersin goes on to say,

In a traditional instructor-led program, there are two outcomes that typically do not exist in technology-based training...a socialization process, in which students talk to each other, get to know each other, ask questions, and ‘enter’ the learning environment... (*and*) an ‘attention getting’ process where the students leave their work or home life, enter a classroom or laboratory, and are motivated and excited by an instructor...Most early failures in e-learning were caused by overlooking these factors. (2004, pp. 42-43)

In these processes, the instructor or trainer in a F2F situation plays a special role. As Bersin (2004, p. 2) notes, they “convey enthusiasm, expert knowledge, experience, and context. They can answer questions and change the pace and direction of a class based on the audience.” Interaction is high in F2F training. Bersin (2004, p. 88) continues, “Expert instructors can reach out to learners. Learners can interact with one another and ask lots of questions. ILT [*instructor-led training*] drives high levels of retention when the course is delivered effectively.”

In web-based training, however, there are no fellow students or instructors to ask questions of, discuss matters with, interact with, or help keep motivated, causing Bersin (2004, pp. 42-43) to refer to WBT as “a lonely experience.” Kruse (2004, p. 2) agrees that “reduced social and cultural interaction” is a potential drawback. He mentions “impersonality, suppression of communication mechanisms such as body language, and elimination of peer-to-peer learning” as elements of this disadvantage, though he is hopeful that future advances in technology will lower the impact these have on WBT. Two other common problems, according to Ladyshevsky (2004, p. 3), are “lack of prompt feedback [*and*] ambiguous instructions on the web.” Kapur (2003, p. 2) notes that

the lack of an instructor may mean difficulty in monitoring the learners' understanding of the concepts and progress. In addition to the instructor, the presence of other learners can also be beneficial. As Bersin (2004, p. 2) states, "people interact and learn from one another."

Another drawback of web-based training concerns issues with technology. "Technophobia and unavailability of required technologies" were cited by Kruse (2004, p. 2) as one of the disadvantages of this kind of delivery medium. On the issue of technophobia, marketing manager Vikas Mishra (cited in Kapur, 2003, p. 2) states that, "E-learning requires a lot of self-driven study methods. Some people have phobias concerning computers, while others balk at any type of computer interaction. They may feel it is too impersonal. Some people may simply freeze when confronted with learning on a computer."

In regards to the issue of required technology being unavailable to the learner, Hofmann (2001, p. 2) stated, "Learners can't be successful if the technology doesn't work." One common problem that has been noted (Bersin, 2003, p.89) is learners' access to high bandwidth connections (particularly those in remote or foreign locations) and the fact that PCs tend to have different browsers, browser versions, and plugins. Bersin (2004, p. xvii) adds: "Internet-based content is often boring, slow, and buggy. Many off-the-shelf courses are nothing more than pages of text with a few colorful graphics."

There are financial issues that must be faced, as well. As Kruse (2004, p. 2) notes, "Up-front investment required of an e-learning solution is larger due to development costs." Whereas, as Bersin (2004, p. 144) notes, "instructor-led training (ILT) is the most expensive...form of training today" and WBT has the advantage of reduced cost overall,

the large output of funds towards the development of WBT at the outset may discourage its adoption in certain organizations. This is especially true where cultural acceptance is also an issue, according to Kruse (2004, p. 2).

Another point to consider is that both WBT and traditional face-to-face (F2F) training must be created by somebody. A trainer or instructor may not be up in front of the class in WBT, but an instructional designer/developer is still required. “Like any educational experience,” Garrison and Anderson (2003, p. 24) noted, “successful e-learning depends on the ability of the educator to create learning environments that motivate students and facilitate meaningful and worthwhile learning activities and outcomes. The teacher who designs the right balance and blend of collaborative and individual learning activities is the key ingredient.”

Blended Learning Environments

Having looked at the strengths and weaknesses of face-to-face training and web-based training separately, let’s now look at what the literature states about blending. This section of the review will first explore the advantages of using a blended learning environment, then address three major challenges involved in the use of blended learning. Finally, we will take a look at Bersin’s “core-and-spoke” approach to blended learning, which has been adopted at ELM.

Strengths of Blended Learning Environments

The term “blended learned environments,” in this project, is used to refer primarily to the mixed use of face-to-face training and web-based training, and secondarily to the blending of synchronous and asynchronous training methods. Several strengths—individualized instruction, social interaction and structure, access to

information, cost, and impact on teaching and learning—are mentioned in the literature in connection with blended learning environments.

Individualized instruction. Blended learning has the potential to assist in individualizing instruction to the learner. Thorne (2003, p. 20), citing the work of Howard Gardner, Paul Torrance, David Kolb, and others, complains that, “Learning is one of the most individual and personal activities that we ever undertake and yet most of us do it lumped together in learning environments that give us very little opportunity for individual coaching and support.”

Masie (2002, p. 58) supports this with the claim that “People are not single-method learners!” He goes on to state that it is natural, even inevitable to use more multiple methods in the process of learning. Some examples he uses to illustrate this predisposition of learners to use multiple methods is the fact that we often enjoy discussing what we have seen on the Internet or read in a book and that we likewise enjoy reading about or searching on the Internet for something a colleague has discussed with us. According to him, humans are naturally “blended learners.”

In both the past and present, many instructors have taken advantage of this. Masie (2002, p. 58) states, “Good instructors have always combined great storytelling (an audio process), with print and whiteboard words and graphics (a reading process), with takeaway tools or even homework.”

Thorne (2003, p. 36) goes on to say, “One of the real advantages of blended learning is the opportunity to be more focused and specific about the learning need,” stating that “there will be common themes, common needs, but there is also the opportunity to look creatively at how the learning experience is designed and to use a

variety of media to suit differing needs.” Diana Joseph, a research associate at the University of Chicago's Center for School Improvement, based on her observations of a blended learning environment in action, provides insight on some of the ways this takes place:

[It] allowed the course to be tailored to each person’s needs... *[and]* enables people to be in different places at different times, which we couldn't have done if it was entirely face-to-face... They *[the learners]* liked the independence of the online environment. In my head, that's connected with the idea of respect. They're expected to be grown professionals who can make their own decisions about what they need to learn. (cited in “Hybrid Design,” 2005, p. 56)

Besides treating professionals with proper respect, an environment that allows for choices, takes into account the differing individual needs of learners—sometimes they need to be guided by an instructor who can alter the pace and answer learner questions. Sometimes they are busy and cannot take the time to go to class, but can use other resources, such as online demonstrations and job aids. Rossett (2006, p. 1) states that “Employees are road warriors who want development, information, and coaching when they need it—not when a centralized bureaucracy can schedule it.”

Social interaction and structure. In “Hybrid Design” (2005, p. 56), it is noted that using a blend means that there are F2F sessions that “can provide some of the social aspects of learning that the online courses sometimes lack” and “maintain some of the structure of the F2F classroom” while combining it with online instruction, which “can extend classroom discussions beyond the class period, and the face-to-face meetings” and enable “students to approach the course content based on their own learning objectives

and interests.” The social aspect and structure are important. As Graham, Allen, and Ure (2005, p. 256) report, much of the lowered completion rates associated with e-learning was due to a “lack of social, interactive, mentored learning environment”—a problem that blending can ameliorate.

Access to information. Access is another advantage to blended learning. Rossett (2006, p. 1) notes that employees may have schedule conflicts or they may work from home or in other places where they are “far from training rooms and instructors.” Singh and Reed (2001, p. 6) add, “A single delivery mode inevitably limits the reach of a learning program or critical knowledge transfer in some form or fashion. For example, a physical classroom-training program limits access to only those who can participate at a fixed time and location, whereas a virtual classroom event is inclusive of a remote audience, and when followed up with recorded knowledge objects (ability to playback a recorded live event), can extend the reach to those who could not attend at a specific time.”

Blended learning allows for multiple ways to access the needed information, especially as it is needed. “Got a question? You can look it up online,” Rossett (2006, p. 2) says, “Got a problem? You chat with your e-coach or share it with an online community. Eager to hone skills in dealing with conflict? You can take a course, work with an e-coach, and use materials embedded in your Personal Information Manager to nudge new approaches.” This is what Singh and Reed (2001, p. 2) referred to as a “just-what-I-need, just-in-time” strategy. Bersin (2003, p. 9) cites greater scalability and deployment speed as two other ways that blended learning increases “just-in-time” access.

Cost. Bersin (2003, p. 10) critiques web-based training, stating that e-learning without blending may not save as much as expected. “By the time you buy an LMS, implement the LMS, buy tools, buy a content catalog, and start building lots of web-based courses—you may find that the total cost has just shifted—from instructors to infrastructure and web development.” He argues that using blending actually helps keep costs down. For example, he works with one company that “starts with job aids first, and then moves up the scale to more expensive media only if the problem demands it. By thinking about every problem as a ‘blending’ challenge, you can select the lowest cost media which solves the problem.”

Singh and Reed (2001, p. 6) report a similar cost-saving approach. “A hundred percent online, self-paced, media-rich, Web-based training content may be too expensive to produce (requiring multiple resources and skills), but combining virtual collaborative learning forums and coaching sessions with simpler self-paced materials such as generic off-the-shelf WBT, documents, case studies, recorded live eLearning events, text assignments, and PowerPoint presentations (requiring quicker turn-around time and lower skill to produce), may be just as effective or more effective.

Likewise, a company shifting from F2F training to a blended approach will likely see lowered costs associated with the F2F elements of its program. According to Singh and Reed (2001, p. 6), “Using computer-enabled distance education techniques allows the [organization] to move a significant portion of the course online, reducing demand for classroom seat time by as much as half. That is, a course that may meet twice a week in traditional face-to-face mode may well need only one weekly meeting as a hybrid course.”

It is interesting to note that blended learning is being combined with another trend that allows for even lower development costs. Companies, Bersin (2003, p. 8) states, “often hire a vendor to ‘teach them’ how to build courseware—then they get a small team together (3-4 people) and build the content internally.” Such is the case with ELM’s learning tutorials.

Impact on teaching and learning. Singh and Reed (2001, p.6) cite studies at the University of Tennessee and Stanford University which suggest improved learning outcomes when blended learning is used. They report that “Organizations are rapidly discovering that blended learning is not only more time and cost effective, but provides a more natural way to learn and work.” Graham, Allen, and Ure (2005, p. 254) add, “Introducing online instructional components opens the range of instructional strategies that can be used” in a setting that has been primarily F2F.

Challenges of Blended Learning

Graham, Allen, and Ure (2005, p. 256) cited three challenges to blended learning:

1. Finding a blend that works,
2. Managing potential increases time demands on instructors and trainers,
and
3. Dealing with cultural barriers

While blended learning may be considered as combining the best of both face-to-face training and web-based training, Graham, Allen, & Ure (2005, p. 254) warn that “BLEs [*blended learning environments*] can mix the least effective elements of both worlds if they are not designed well.” Design in blended learning requires, among other things, an awareness of the circumstances in which training will be taking place. For

example in discussing delivery media, in particular, Bersin (2004, p. xviii) stated that “No single model or blend of media fits all. There are some basic guidelines...but the right blend depends on many criteria. These include business strategy, program type, audience, budget, resources, content stability, content duration, and technology infrastructure available.”

This leads to the question of time demands on trainers, particularly during design and development. Similar to cost in terms of money, the initial cost in time may be great. “Creating a blended learning strategy is an evolutionary process,” Singh and Reed (2001, p. 4) explain, “You will need to explore the capabilities of your team, your organization’s infrastructure, and your learners’ receptiveness to new learning formats.” Often, as Graham, Allen, & Ure (2005, p. 257) note, instructors and trainers are developing the WBT component while delivering F2F training, leading to increased time demands. Even more daunting is the idea stated by Hofmann (2001, p. 4) that teams must “be willing to fail a few times in order to get the right blend.”

Cultural barriers, such as lack of management support, can also have an impact on a blended learning environment. “In higher educational institutions, faculty may hesitate to try blended approaches because they are not sure they have departmental support...Similarly, management support for BLEs is essential if they are to succeed in corporations because executives have a large influence on company culture.” (Graham, Allen, and Ure, 2005, p. 257).

But even in an environment in which management is supportive of blended learning, learners may still not be willing. Rossett (2006, p. 3) reports, “In a proprietary study conducted for a large government organization, we found that executives were

most favorably disposed to blending. The employees, however, were less so.” This may be attributable to a perception among learners of dauntingly increased level of responsibility for their own learning.

The Core-and-Spoke Approach of Blending

In weighing the strengths against the weaknesses of blended learning versus a single approach, along with the specific needs of ELM Resources, the director of training decided that a blended learning environment would be appropriate in this situation to help ELM face its training challenges. This led to the question of how training will specifically be blended at ELM.

Bersin (2004, p. 56) named two different approaches in blended learning. The first is the “program flow model.” This approach involves creating “a step-by-step curriculum that integrates several media into a chronological program or syllabus.” The second (and the one adopted by ELM) is what he calls the “core-and-spoke model.” This means that “one fundamental training approach (typically onsite training or web-based courseware)” is created and “other materials, interactivities, resources, and assessments” are delivered to support the fundamental approach (not in a “step-by-step manner”).

Bersin (2004, p. 73) explains that the core-and-spoke model varies from program flow in that “the supplemental materials are optional and not explicitly scheduled; students decide which supplemental materials to use; and all students do not necessarily complete the course at the same time.”

The benefits to the core-and-spoke approach, according to Bersin (2004, pp. 74, 78), include “deployment simplicity” (since the trainers can focus on one main activity and “build the surrounding materials over time”), self-pacing, flexibility for learners, and

not having to “schedule, manage, and track learners through a series of linear steps.” In addition, the supporting, or “spoke,” activities “can be very specialized for special needs.” Bersin cites one example of an organization that had high-cost labs as part of their program. Some but not all of the students used these but they were very valuable for advanced learners.

ELM uses a combination of traditional face-to-face training and web conferencing as its core method, with the web-based tutorials and other materials as the spokes.

The Web-based Portion of the Blended Learning Environment

While the training department at ELM has added other training materials and tools online (such Ask-A-Trainer, which allows learners to quickly and informally ask questions and receive answers on ELMNet), the tutorials will make up the majority and the focus of the Web-based portion of ELM’s blended learning. Before concluding this review, two topics specifically related to the tutorials ought to be addressed—the use of simulations and the evaluation of the software application used to build the tutorials.

Simulations in Training

First, we will take a look why simulations can be valuable to training. In a typical tutorial produced by ELM, the learners will first watch a process being modeled, then try it themselves in a simulation (though learners have the option of completing only one part of the tutorial).

According to Davies (2001, p. 1), simulation was introduced as a part of training by airlines and the military and has since spread to other high-risk industries, where learners can practice without making potentially costly mistakes. “Simulation is widely used throughout industry,” says Bersin (2004, p. 193), “and typically applied to jobs

where the impact of failure is very high...The benefits of simulation are clear: it creates high levels of mastery and performance by enabling learners to learn by failure.”

Davies continues, “If simulation can train a pilot to land a jumbo jet, and a technician to configure a router correctly, why can't it be applied to business tasks where the cost of failure—alienating a subordinate or customer, blowing a major sale, bungling a Web development project—can be just as high?”

In the case of ELM, the impact of failure is indeed high—when the clients use ELMNet, they are using sensitive student data.

Information about Captivate

After reviewing the tools that could be used to create the tutorials, Macromedia Captivate was selected. In this final section of the review, we will begin with an explanation of Captivate and how it is used to create tutorials. The application's advantages will be discussed, followed by a discussion on its disadvantages.

Creating tutorials in Captivate. Captivate is a tool used for the creation of software demonstrations, as well as interactive simulations. Referred to as a rapid e-learning tool, it allows average users, including subject matter experts, to quickly develop content and deploy it as e-learning. Clothier (2005, p. 2) noted that Captivate can also be used to convert PowerPoint files to .swf files, create tests and assessments, and include voice-over narration, animated text, and more.

Creating a Captivate tutorial involves first recording screenshots, mouse clicks, and keyboard entries. After this process is complete, Captivate displays what it has captured, using, as Clothier (2005, p. 1) describes it, a “PowerPoint sequential slide metaphor.” Then, the process of editing begins. The pacing of the slides can be adjusted

and interactive elements, graphics, captions, and buttons can be added. Finally, the edited slides are typically saved as a .cp file (this allows for future editing) and then published as a finished .swf or other file.

Advantages. Captivate has been noted for a number of advantages. According to Merrill (2005, p. 1), Captivate has been marketed for its rapid development of demonstrations and simulations in Flash format with interactivity without knowing Flash or other programming. Flash has a significantly steeper learning curve than Captivate. Clothier (2005, p. 6) states that unlike Flash, successfully using Captivate is possible for those who have average but not advanced computer skills and no programming experience.

Farkas (2005, p. 1) attributes Captivate's more gradual learning curve partly to its intuitive editing interface that allows for the easy modification of visual and audio elements and pacing during editing, using the sequential slide metaphor noted before. According to Rapoza (2004, p. 1), a developer can see how a slide or an entire tutorial will work before publishing the file by using the timeline and preview features. The amount of time and effort that is required to create tutorials in Captivate is significantly less than in Flash since much of the work is done automatically, as Warden (2005, p. 1) and Farkas (2005, pp. 2-3) note. The latter points out that Captivate smoothes out the movements of the mouse, separates captured screenshots into multiple frames for editing purposes, and provides separate tracks for animation, mouse clicks, annotations, and other elements.

Captivate is compatible with Flash, as it includes a Flash export capability, giving developers the advantage of both Captivate's development speed and Flash's "elegance

of design” according to Clothier (2005, p. 4). Captivate itself can produce a .swf, the same format of files as Flash. It can also be used in conjunction with the widely-used Microsoft PowerPoint, with which most subject matter experts have experience. These presentations can, with a minor amount of editing, Clothier continues, be imported into Captivate, published in Flash format, and uploaded. Merrill (2005, p. 1) adds that applications such as Questionmark Perception, Breeze, and Authorware can likewise be integrated with Captivate.

Captivate offers a variety of ways to capture different elements, such as mouse movement and clicks and several recording modes, such as demonstration or simulation, which can be customized by the developer. Each frame can be shortened or lengthened according to need, without necessarily slowing down the action. Captivate also, according to Farkas (2005, p. 2), “recognizes the fact that not every demo requires annotation or mouse movement.” Audio can be easily added since the length of the frames can be modified to synchronize the audio with the video and developers can use a built-in audio editor to cut, paste, add silence, and adjust sound levels. Farkas also states that interactive components, feedback, and quizzes can easily be added. Warden (2005, p. 1) notes that this adds ease of use and added value for end users, as well, turning, as Clothier (2005, p. 4) states, “seemingly dry content into something lively and engaging.”

Disadvantages. Captivate does have its disadvantages. Farkas (2005, p. 3) mentions, that the final product can be relatively large in size. Because Captivate must manage the large amount of media it creates, including screen captures, audio, cursor movements, and custom text, it is generally not suitable for large, comprehensive projects. Even if a developer uses a fast computer, the end user may have a slower

machine, which will lead to considerable difficulty in opening and running larger tutorials. Warden (2005, p. 1) suggests that collections of small and concise demonstrations and simulations are much more suitable to Captivate. Previewing, as well as saving, the movies made in Captivate is a related issue. Again, as Farkas (2005, p. 3) notes, because of the memory required, a developer will wait what seems an extraordinarily long time to preview or save a file.

Captivate tends to have a few quirks related to how it goes about capturing screenshots and motions. For example, Farkas (2005, p. 3) found that occasionally Captivate didn't record every page during the screen capture. Developers often become familiar with these and come up with strategies to bypass the mistakes. Remedies to the above problem include using the print screen button to capture a screen shot of any missed page or re-recording and inserting missed pages later. These quirks tend to be minor but nonetheless annoying.

Captivate was not meant to be as sophisticated a tool as Flash, nor produce as sophisticated a product. While Captivate is far easier to use than Flash, Clothier (2005, p. 1) states that its "capabilities are rudimentary." If you want easy-to-create tutorials with very good results, Captivate will work. If you want absolutely spectacular tutorials, Captivate must be used in conjunction with Flash, which will require specialized knowledge.

Despite Captivate's ease of use and automatic features, instruction will suffer without good instructional design principles. Just as it is possible to deliver a boring lecture, write a badly-organized instruction manual, and create an ineffective PowerPoint presentation, it is possible to create a boring, badly-organized, and/or ineffective

Captivate tutorial. Technology does not replace good instruction though it can greatly enhance it.

Overall, the advantages of using Captivate outweigh the disadvantages. Because of its relatively low price, ease of use that allows the trainers to double as developers without intensive training, its options (e.g., to create both demonstrations and interactive simulations), and the fact that a library of tutorials will be created to demonstrate each of the processes, Captivate was selected for this project.

Product Description

This section describes the tutorials created for this project. The structure of an typical tutorial, the tutorials' place within ELM's evolving training program, and the development of the tutorials will be discussed. The ELM training staff is continuing to develop new tutorials (a total of 266 tutorials had been developed at the end of 2007). However, for the purpose of limiting the scope of this project, this project encompasses the first 150 tutorials, developed by June 2006. Currently, the tutorials are available at ELM's website (<http://www.elmresources.com/training/index.php>).

The Structure of the Tutorials

Each Web-based tutorial teaches one process that the learners need to know to use ELM's system. All of the tutorials have a demonstration section where students watch a process being completed (a cursor points and clicks at the appropriate places on screen or word being typed in a text box to demonstrate the process, while captions boxes appear explaining the process). Figure 2 shows a sample screenshot of a demonstration section of a tutorial. See Appendix A for additional screenshots.

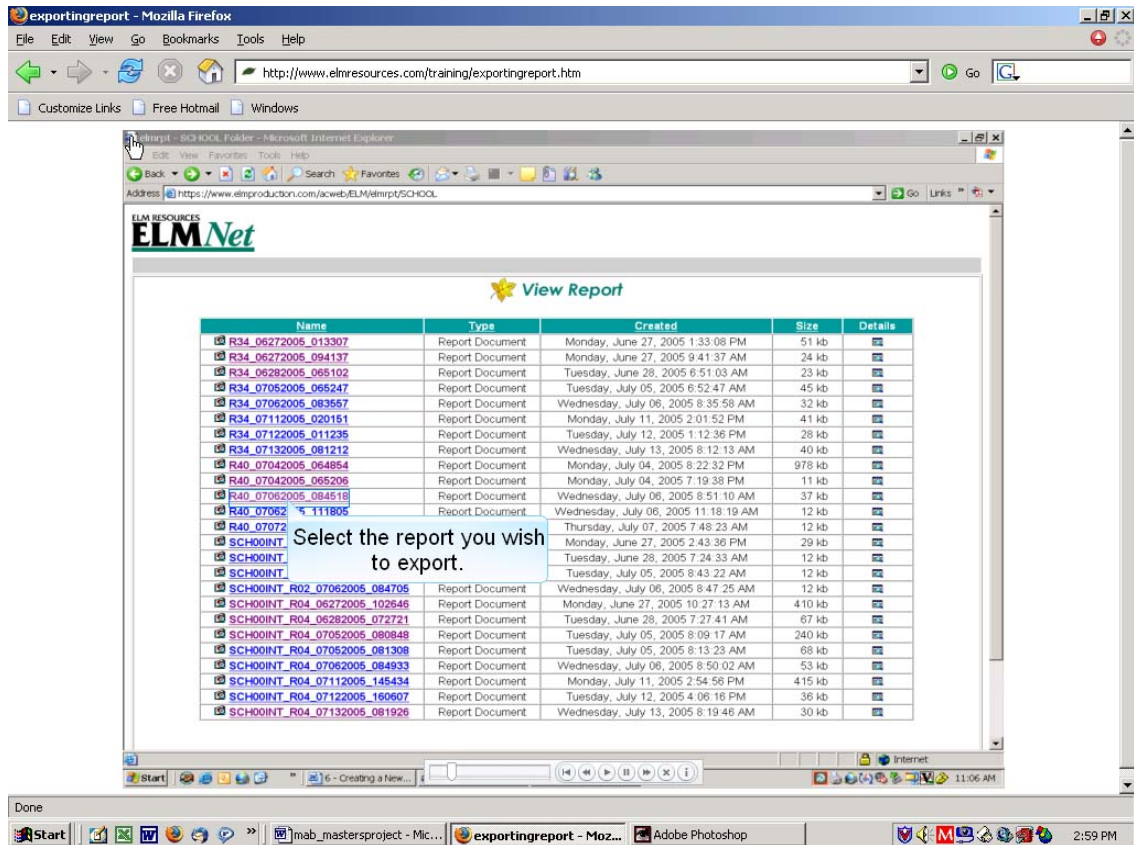


Figure 2. Screenshot of a tutorial.

Most tutorials have a simulation portion, which allows the learner to practice completing the process themselves while being offered guidance as needed. In the demonstration, the learner watches as the cursor moves on its own but in the simulation, the learner is required to supply the appropriate action. Caption boxes appear to prompt the learner. If the learner fails to supply the correct action, a caption appears with further instructions. If the learner takes the correct action, a success caption appears and they are allowed to move to the next step.

The Tutorials in the Context of ELM's Training Program

ELM's training program still uses face-to-face and Webconferencing training sessions as its primary form of training. The tutorials are used as a supplement to the training sessions. Learners may access these tutorials from a library of tutorials at any time. They may also choose to complete both the demonstration and simulation or just one or the other, based on their individual needs. Other supplemental delivery methods and materials were developed concurrently with the tutorials.

The following paragraphs describe the changes to ELM's training program during the course of this project and provide a context for the tutorials, showing how they were a part of the overall change to a blended-learning environment.

Prior to the start of this project, the methods of training delivery were onsite training, WebEx sessions (videoconferencing), and client meetings. ELM's training materials and documentation consisted of the School User Manual (for school staff) and the Member User Manual (for lenders).

In August 2006, the following methods had been added: customized training by school, Quickstart cards (job aids), on-demand web-based tutorials (the focus of this project), *Ask the Trainer* link for just-in-time training, conference presentations, one-on-one coaching, targeted training for FAQs, ELM Help Desk support, and Priority Services Specialist (PSS) and Regional Account Manager (RAM) support.

In addition, by August 2006, the manual had been updated and redesigned, and additional written training materials had been created. These additional materials were, namely: a staff resource guide, the *Using ELMNet* school training manual, the *Using ELMNet for Lenders, Servicers and Guarantors* lender training manual, the *Quick*

Reference Guide to Loan History, web-based tutorials (the focus of this project), an *Ask the Trainer* link, the ELM Management Training manual, the ELMNet Course Catalog, and enhancement updates. Materials were made available not only in English but in Spanish, Tagalog, and American Sign Language.

The Development of the Tutorials

The initial stage in the development of the tutorials entailed training the staff on the use of Captivate. After I had trained the Director of Training, she held a videoconference with the training specialists to teach them on the use of the software and the publishing standards for the tutorials. The standards were also documented in the Training Procedures and Policies Manual.

To assess learner need, the training department reviewed the ELM Help Desk calls that are categorized as training-related. They especially watched for frequently asked questions. These helped determine the training focus, including what tutorials would become a priority for development.

Afterwards, a chart of all the tasks for which a tutorial was needed was created. Trainers signed up for tutorials they wanted to create, developed them, and then made an entry on the chart to indicate the tutorials had been completed. Figure 3 shows an excerpt of the Tutorial Creation Chart. The chart shows how the trainers kept track of the progress of each tutorial, whether a demonstration (as shown in the Module column) and/or a simulation (as shown in the Test Module column) had been developed, who owns the tutorial (indicated by the staff member's initials), and whether the tutorials had been posted and linked on the website. The fourth line from the bottom shows a tutorial that is available for developing. The various processes were grouped into categories and

Function	Module	Test Module	Owner	Posted	Website
Administration					
Logging in to ELMWeb	X	X	SK	Feb-06	
Using the Function Selection Menu	X	X	SK	Feb-06	
Changing a Password	X	X	SK	Feb-06	
Forgetting your Password	X	None	ACB	Oct-06	Oct-06
Working with System Timeouts	X	None	SK	Feb-06	Mar-06
Setting up User Accounts					
Setting up a New User	X	X	SK	Feb-06	
Changing a User Account	X	X	SK	Feb-06	
Changing a User's Entity Association					
Deactivating a User	X	X	SK	Feb-06	
Using Online Resources					
Checking ELMNet Production Status	X	X	SK	Mar-06	

Figure 3. An excerpt of the Tutorial Creation Chart

the lines shaded in gray indicate the title of each category.

Each member of ELM's training staff was given access to Macromedia Captivate to create tutorials. (Note that since the beginning of this project, Macromedia has been acquired by Adobe and is now known as Adobe Captivate.) After approval from the Director of Training, a trainer created a tutorial based on the instructional needs of the learners. To create a tutorial, the training staff member captured on-screen movements in Captivate. Captivate automatically animated the movements. The staff member edited the movements, added captions, interactivity, and narration, and adjusted the timing of the animation. The end product was a tutorial that can be viewed using a Flash viewer.

After development, tutorials were sent to the director for quality control. She checked each tutorial for clarity, correctness, consistency, and adherence to the Policies and Procedures Manual. Unless major revision is needed, the director made any modifications needed. Major revisions were rare. The tutorial was then sent to ELM's technology team to be posted on the company website.

The first fourteen tutorials were posted to the Web as they were finished in May and June but implementation wasn't officially announced until September at a major conference. No official announcements are made for each new tutorial.

An iterative process was employed in creating the tutorials. The first few tutorials were deployed as prototypes and feedback was sought and used to improve the tutorials. For example, the training staff demonstrated the first tutorials before the Operations Committee, a meeting of ELM staff and lenders. Lenders were given the opportunity to use the tutorials during this time and give feedback based what they saw and experienced. I was also asked to use and give recommendations on the early tutorials. For example, the training staff was uncertain how much should be included in one tutorial. After viewing the tutorials, I recommended that the tutorials ought to be kept to a few minutes each, or one process per tutorial, due to the complexity of the processes. The training staff used this suggestion and created shorter tutorials focused on a single process. As the training staff incorporated the feedback from the lenders and myself, they were able to develop templates to be used in the creation of later tutorials.

After the development of the initial tutorials, the training department continued to monitor training-related Help Desk calls to determine which new tutorials ought to be developed and if any of the already-developed tutorials ought to be revised. Figure 4

Issues by Type

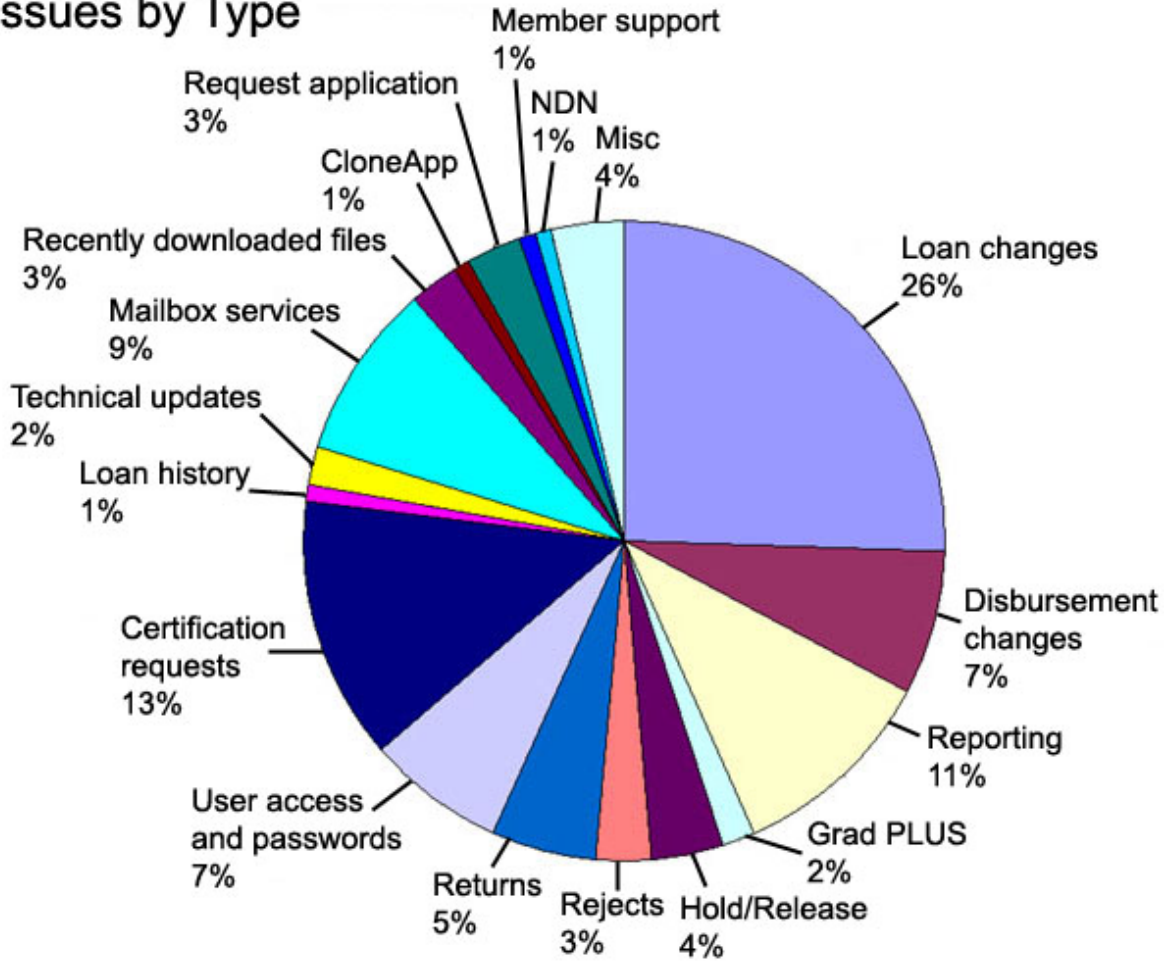


Figure 4. Training-related issues addressed in customer service calls.

shows a sample chart displaying the percentage of types of training-related calls for one month. In this case, the top training priority would be loan changes, with certification requests and reporting being important priorities. The training staff would then evaluate the training provided for loan changes, certification requests, and reporting. If no online tutorials had been developed or are scheduled for development, they would be added to the Creation Chart.

Evaluation of the Project

This evaluation section begins with a description of the three groups of target audiences who were directly impacted by the tutorials—school staff, lenders, and ELM training staff (including the training specialists and the Director of Training). The instruments developed to address the impact of the tutorials on the three audiences are then outlined. This is followed by a description of the procedures for the administration of the instruments. The section concludes with a summary of the results of the evaluation.

Description of Target Audiences

The primary audience for ELM training is school financial aid office personnel from a large number of educational institutions (ranging from universities such as Harvard to vocational schools including small beauty colleges). The level of computer experience varies, and staff turnover may be frequent. It is important to note that the schools are not charged for the use of ELMNet or for any other services provided by ELM, including training. School staff satisfaction, however, is regarded as a priority since the schools are paying customers of the lending institutions that financially support ELM. A large number of dissatisfied schools could cause the lenders at these institutions to send part or all of ELM's funding to one of its competitors.

The second audience for ELM training are lenders, loan servicers, and guarantors participating in the student loan industry. This staff tends to have a higher level of technical expertise, and a much greater understanding of the CommonLine standard. Because of this, much less training is required for this audience than for school staff, leading to the major training focus on the school staff instead.

The third audience for ELM training is the ELM Resources staff. This group is similar to the second group in technological expertise. While most staff are familiar with ELMNet, newly hired employees and updates and enhancements to ELMNet necessitate some training on the system. In addition, other training (such as security procedures and use of non-ELMNet software used within the company) is needed.

Instruments

Surveys and an interview provided data and anecdotal evidence regarding the impact of the web-based tutorials on ELM Resources. The feedback in these instruments was provided by the school staff, the lenders, the training specialists, and the Director of Training. Both the survey and interview questions and their corresponding feedback are reproduced in Appendix B. In terms of the evaluation of the project, the director of training and I were particularly interested in comparing the tutorials as a learning tool to the other training methods described above to learn in which situations they would be the most powerful tool, as well as the impact of the tutorials on the training staff and learners. Additional information was taken from the 2006 ELM Training Report (Boyd, 2006) and other correspondence as noted below. The instruments included the following.

School Staff Survey

A nine-question survey was developed with the school staff specifically in mind. Respondents were first asked whether they had had the opportunity of using the tutorials by the time of the conference. This was followed by questions in which the learners were asked to rank using Likert scales the helpfulness of the tutorials in helping clients better understand how to use ELMNet (using a four-point scale), the usefulness of the demonstration portion and the simulation (or “Test Your Knowledge”) portion of the

tutorials separately (using four-point scales), whether they would want to see more tutorials made available (using a five-point scale), and whether narration would be considered a valuable addition (using a four-point scale). Finally, the participants were asked several short-answer questions, namely, describe what they liked most about the tutorials, what they liked least about the tutorials, what suggestions they had to improve the tutorials.

Lender Survey

This survey consists of four subjective, short-answer questions related to the lender's perceptions of the training department and its role at ELM. While not specifically about the tutorials, most of these can inform evaluation on the changes, including the tutorials, made to ELM's training program during the course of this project. The relevant questions include, "What impact has the training department had on how you feel about ELM?," "What are we doing right?," and "We had a lender here who mentioned that she saw training as one of our competitive advantages. You have a better base for comparison. Is that true?"

Note that the lenders were also asked, "What would you like to see us do better or do more of?" Since the responses were not relevant to this project, they will not be reported in the results section but are included in Appendix B.

Training Specialist Survey

Unlike the lender surveys and like the school staff survey, this specifically addressed the tutorials. All the questions in this survey were short-answer questions. The trainers were asked whether they felt that the tutorials are useful in helping the learners better understand ELMNet. They were asked to discuss the impact these tutorials have

had on ELM Resources as a whole and on training at ELM specifically and the future impacts that trainers expect based on their observations were also discussed. The trainers were then asked to describe what they had observed about the learners' attitude toward the tutorials, as well their own attitude towards the tutorials. They were asked to list the advantages and disadvantages of using the tutorials. Finally, they were asked to compare the tutorials with the other methods of training used at ELM.

Protocol for an Interview with the Director of Training

The interview protocol began with a question whether the Director of Training feels the tutorials are useful in helping the learners better understand ELMNet. She was then asked about the impact of the tutorials on ELM Resources in general and ELM's training department specifically, including any impacts *not* directly related to teaching clients to use ELMNet (such as the use of tutorials in training ELMNet staff). She was then asked to describe her observations on the attitudes of the learners and the training staff towards the tutorials. The next questions dealt with information on the production and quality control procedures for the tutorials. The director was then asked about the advantages and disadvantages of using the tutorials. She was asked to describe the other methods of training at ELM and the history of the tutorials. Finally, she was asked to share what she wanted to do with the tutorials in the future.

Procedures

This section outlines the procedures used in administering the evaluation instruments described above. As the instruments were administered differently, each instrument is described separately.

School Staff Survey

Because the learners were located across the country and were more likely to respond to the training staff (who were familiar to them), the staff administered the learner survey at a major ELM conference attended by learners from many of the client schools located in a wide variety of locations. This took place eight months after the official implementation of the tutorials. Participation was voluntary and anonymous.

Lender Survey

At about the same time as the above survey, the Director of Training sent a survey about ELM's training to the lenders via email. The lenders replied by email. Like the school staff survey, participation in this survey was voluntary. In addition, the Director of Training stripped the emails of the names and email addresses of the lenders before passing them on to me, in order to maintain anonymity.

Training Specialist Survey

The trainers were also sent a survey via email. While I wrote the instrument, the survey was sent using the Director of Training's email address. The trainers responded by email. Participation was voluntary and identifying information has been removed from the responses to preserve anonymity.

Interview with the Director of Training

In June 2006, I interviewed the Director of Training on the tutorials, as well as the more general changes to ELM's training department. I also corresponded with her by email and received a copy of the Training Report (as noted in the introduction to the Evaluation section). The information reported in the results section comes from the interview but also includes supplemental information from the other two sources.

Results

The results section summarizes the responses to the various surveys and the interview. To see the responses in more detail, please refer to Appendix B.

School Staff

Sixty-four percent, or 73 of the 114 respondents, had had the opportunity of using the tutorials by the time of the conference. As the 41 respondents who did not have the opportunity to use the tutorials did not answer any further questions on the survey, only the results of the surveys returned by the 73 respondents (who had reported they had used the tutorials) are given below. When asked about the helpfulness of the tutorials in helping clients better understand how to use ELMNet (using a four-point scale), all the respondents replied in the positive, with 90% saying that they are “very helpful” and 10% saying that they were “somewhat helpful.” Of those who responded when asked to rank the usefulness of the demonstration portion and the simulation portion of the tutorials separately, 87.5% ranked the demonstrations as “very useful” and 12.5% as “somewhat useful,” while 93.33% ranked the simulations as very useful and 6.67% as “not very useful.” When asked whether they would want to see more tutorials made available, 62% responded with “yes, very much,” 31.25% with “yes, somewhat,” and 6.25% with a neutral response. None of the respondents replied with either “no, not really” or “no, not at all.” In this survey, 26.67% responded that narration would be “very helpful.” 66.67% viewed narration as “somewhat helpful” and 6.67% as “not very useful.”

The remainder of the survey items consisted of open-ended questions, which had a much lower response rate than the items reported above. The responses to the open-ended questions are summarized below. Upon being asked to describe what they liked

most about the tutorials, three of eight respondents to this question commented upon the tutorials' ease of use, two of these respondents also remarking on the brevity of each tutorial. Another respondent noted that the tutorials were a quick way to refresh what clients had learned before in the live and WebEx sessions. Besides the short nature of the tutorials, the pacing of the tutorials was also listed as a positive aspect by two of the respondents. Other responses took note of the ability of the tutorials to represent visually the processes being taught, the opportunity to test understanding of these processes, and the "many choices" afforded by the tutorials.

Only four responses were given when participants were asked what they liked least about the tutorials, with one respondent answering that he or she could think of "nothing really" that was negative. Of the three remaining respondents, one stated that the tutorials were "a little boring," one stated that there was no sound, and one noted that "too much is typically missed in the learning process when it is not live or interactive."

When asked for suggestions to improve the tutorials, two respondents out of ten replied that the option of sound/voice narration would be a good addition. One of these respondents also suggested adding the ability for users to control pacing within the tutorials. Another respondent suggested the addition of animation and interactivity "to keep attention and clarity first & foremost." This response may be a little difficult to interpret as the tutorials already include animation and interactivity; however, another respondent noted that the tutorials should be "more dynamic." Two respondents asked that ELM continue adding to the tutorials, with one adding "in a timely manner." One respondent suggested that the tutorials become "eventually more specific." One respondent asked for a hands-on training environment (see Critique for further

information on this), but did not specify whether this was in addition to or as a replacement for the tutorials.

Lenders

Thirty-one of the fifty lenders responded to the survey and the responses are reported below. When asked to describe the impact the training department has had on the lenders' attitude about ELM, the respondents noted that the training department had given them more confidence in ELM, its product, and in its "ability to communicate and keep staff and partners up to speed on changes." One respondent noted that the sales staff at her institution are able to "sell ELM more comfortably" because of the training and support available, and that the tutorials have helped in the training of staff at that institution.

When asked what ELM's training department is doing right, one respondent listed the manuals and on-line tutorials as assets, while another noted the tutorials, face-to-face training, and WebEx sessions. The latter added that ELM had made an effort to provide "convenient training...for different levels and skills." In speaking of the tutorials, a respondent noted that the ability to self-test is critical after completing a course and that this is provided by the simulation portions of the tutorials.

Finally, when asked if the training offered by ELM is one of ELM's competitive advantages, all the respondents agreed. One noted that, "It didn't used to be that way, but it is now." Respondents specifically cited how well ELM "transition[s] schools to their product and provid[es] training to the schools" compared to the competition. They also mentioned the much higher levels of support during and after implementation of ELMNet at new schools, as well as the variety of training methods. "While many of [ELM's

competitors] offer initial training or guides,” notes one respondent, “they do not have all of the tutorials or additional communication and training of new features.”

Training Specialists

Almost all trainers felt that the tutorials are useful in helping the learners better understand ELMNet, with one exception of a trainer who stated that she has not had feedback from users. In explaining why they think the tutorials are helpful in understanding ELMNet, trainers said that learners focus more on individual processes, are able to see the steps in the process (rather than just read or hear about them), and review these “as often as they like.” One trainer noted that users will be able to find demonstrations of processes that they don’t already use, which may increase ELM’s “volume and profitability.” Another trainer felt that the tutorials were not as useful in helping “learners understand how ELMNet itself necessarily works” as it is in helping them understand how a specific function works. (The tutorials addressing how ELMNet works had not been developed at this point. However, the majority of the tutorials still focus on specific processes.)

In their discussion of the impact these tutorials have had on ELM Resources as a whole, all the trainers who responded felt that the tutorials contribute to a better perception of ELM. One trainer said that clients will see that “we want them to succeed in their loan processing, while another said it “shows that ELM wants to grow toward and evolve with the school and their needs.”

Regarding the impact on training at ELM specifically, the answers differed more here than in the previous question. Trainers mentioned the reinforcement of previous training when the learners need it, less time spent answering questions leading to more

time spent in new training, and a better perception of the training staff. Impacts on the training department not directly related to teaching clients how to use ELMNet include an improved skill set for the trainers “by giving *[them]* exposure to a new piece of software” and the ability to train better “by reinforcing the idea that not all trainees learn in the same way.”

The future impacts that trainers expect based on their observations were subsequently discussed. The trainers felt that there will be a further decrease in the need for refresher training sessions, less frustration, and greater empowerment when learners actually use ELMNet. In addition, one trainer mentioned that she felt that the training will be a selling point for non-client schools and will increase the existing clients’ confidence in ELM to “always improve with the latest training environments.”

In describing what they observed about the learners’ attitude toward the tutorials, all the trainers indicated that the learners were positive about the tutorials. One stated that most of the learners that she has introduced to the tutorials are excited because of the opportunity to reinforce their learning later. Another described learners as “extremely positive,” even noting “cheers and shouts of glee when demonstrating these tutorials.”

When trainers were asked about their own attitude towards the tutorials, the response here was likewise positive. One trainer stated that she was excited because she can “leave the school with something that will help them later on, possibly when a trainer is not available to help them.” A trainer mentioned that the tutorials allow for more options during training and that she shows one of the demonstrations during training to help learners feel that they will supported in their learning. Another trainer uses the tutorial to “perk up the learners at the end of the training.” The tutorials will also be

useful for the Priority Services Specialists and Help Desk staff, according to one trainer. However, one of the trainers would like more feedback on the tutorials that she created.

Of the advantages noted by the trainers of using the tutorials, four trainers noted the convenience of having training that is available at any time and any place to anyone. Two mentioned that a large time commitment is not needed due to the short length of each tutorial. Four mentioned the reduction of questions by learners, which they feel is an advantage to trainers because it allows them to provide less refresher training and more new training and to learners because they can quickly call up a tutorial rather than spend time calling or emailing the trainers, or even scheduling and attending refresher courses. Other advantages mentioned are better understanding by learners of specific processes in ELMNet, increased profit due to learners using the tutorial library to find new processes that they are not already using, the quietness of the tutorials that will allow users to play them without disturbing coworkers, and the addition of a training option (allowing greater training breadth).

Most of the disadvantages noted by the trainers had to do with how the tutorials were being made available. Trainers pointed out that the Help Desk staff and Priority Services Specialists do not know about them yet (even though they could benefit from them). Another disadvantage was the fact that learners must scroll “through the entire list to find what *[they]* are looking for” (note that since the survey some reorganization of the tutorial homepage has taken place), that there is no link from the online User Manuals to the tutorials page, and that none of the tutorials were directed at “Lenders/Members doing online updates.” Another disadvantage had to do with the impersonal nature of the

tutorials. Two of the trainers noted this, stating that learners cannot ask questions or interact with a live trainer by using the tutorials alone.

When asked to compare the tutorials with the other methods of training used at ELM, a trainer stated that the different format can enhance learning. Another trainer stated this a little differently, saying that the tutorials can reinforce information given in the manuals, training guides, and training sessions. Other trainers noted that the tutorials are available at any time. One trainer said that this makes the tutorials more convenient because learners “do not have to depend on anyone being available when *[they]* are,” while another trainer said it was quicker because learners “can have immediate access to training without waiting to get a future *[training]* date.”

The Director of Training

In the interview, the director was asked if she felt that the tutorials were helpful to the learners. She replied that the tutorials were valuable to the learners, as it allows learners to see the necessary steps that they must do to complete the various tasks in ELMNet. “One of the advantages of the software is that *[the tutorials]* are so visual,” she reports, “The ELM Help Desk requested that a tutorial be created to help users learn how to highlight and copy a new password from an e-mail. This task took the Help Desk staff up to twenty minutes to describe verbally. The tutorials provided a way to show them the task.”

They are easy to use and of a short duration, which the learner can view in “small periods of time that the clients have available.” Each tutorial is also targeted to an individual task, allowing the learners to choose the relevant task without having to watch information about tasks that are not so relevant.

The tutorials also help provide more options to the learners, who have different needs, skill levels, and learning styles, in the ways they receive training. For example, schools with high staff turnover rates find the tutorials especially attractive, since new staff can be trained quickly and more conveniently.

They also provide a more authentic learning environment. Due to the nature of the data within ELMNet, using the actual system can be dangerous as important information about students and their loans could easily be altered or exposed. The tutorials provide the safest alternative yet available. “For now, they are as real as it gets in a training setting,” says the director. Because of this, the trainers use them in live training sessions to give a visual aspect to their training.

The director reports a highly positive reaction from both the current learners and potential clients towards the tutorials. “Simply having them there is a plus. They’re seen as simple, short, easy, and another option.” In addition, the learners leave training more confident because they know that they can use the tutorials to remember what they have learned.

She noted a number of impacts on ELM itself. The perception of ELM in the eyes of school staff, lenders, and board of directors has improved, giving ELM the image of a professional and technologically progressive organization. There were also unexpected impacts on the organization. The fact that ELM has such tutorials (while their competitors do not) is seen by clients as a definite selling point. According to the director, one lender told her, “One of our schools loves you. The reason they chose ELM is because of all the web-based training on the website.” Such incidents have prompted the sales department to use the tutorials in their sales strategy.

The Help Desk personnel have started using the tutorials when working with clients. They have also requested the creation of several new tutorials. Also, ELM staff members are being provided with their own tutorials, not only on ELMNet but on other topics, such as the time-tracking software they are required to use.

The director also pointed out that the trainers are benefiting and have received the tutorials positively. They incorporate the tutorials into their training sessions. Also, they are using the time they spend creating the tutorials, learning more about training and about ELMNet. She notes that some trainers enjoy the creation process greatly, while others do not, but that the process has been set up so the trainers can choose how much time to spend on creating tutorials.

The time required to develop a tutorial has decreased. The first set of tutorials took one work day, or eight hours, to develop. The director had expected the development time to decrease to four hours. Instead, she found that each of the subsequent tutorials took only two hours. She explains, “the development of the words for the tutorials is not as hard as anticipated. Often, we use what’s already in the documentation.”

The software chosen has proven easy to use, learn, and teach, as well. The short development times and the ease of use (that allows the training staff rather than an experienced programmer to develop the tutorials) make this project a good value, especially compared to benefits ELM and its clients have received from the tutorials.

The disadvantages of using the tutorials, according to the director, include, the loss of the personal touch and the ability to ask questions that tend to be found in training sessions with a trainer present. She also was starting to feel that not having a voice

narration was a disadvantage, since some learners seem to do better when they “can hear as well as see and do.” There was also been some difficulty in “letting people know it’s there” because of “its current placement on the website, where it’s not easily found.” The placement of the tutorials page has been since moved, however, to a somewhat easier location to find.

The future directions for the tutorials include the documentation of all ELMNet’s functions, and the addition of Spanish language support with the tutorials. There is also interest in giving ELM’s developers access to Captivate and using the screen capture function to show trainers how new features work. This will allow them an alternative to attempting to explain it to the trainers in words, which many of the developers find hard to do. The addition of an optional auditory component has been explored and may be used in future tutorials.

The director provided information on some trends she has found interesting. The first is the number of hits registered on the ELM Resources School Tools Online Tutorial page. This page had fewer than 6,000 hits per month before April 2006, but has moved higher in the list as new tutorials were added. However, in April, the hits had increased to 6,971. Over the next four months, the hits either stayed nearly the same or increased (7,655 in May, 7,653 in June, and 9,878 in July), reaching 12,548 hits in August. She feels that this increase in hits is mainly due to word-of-mouth between school staff and the use of the tutorials by the trainers in training sessions and Help Desk staff.

Another trend was related to a decline in the number of monthly customer service calls related to training issues. Figure 5 shows that training-related calls have had a mostly downward trend. The implementation of a new federal student aid program and a

few enhancements to ELM’s systems during this period could have been expected to greatly increase the call volume. However, no significant increase was noted. The average number of training-related calls dropped from an average of 212 per month in 2005 to 139 per month in 2006. This represents a 34% decrease in training-related calls.

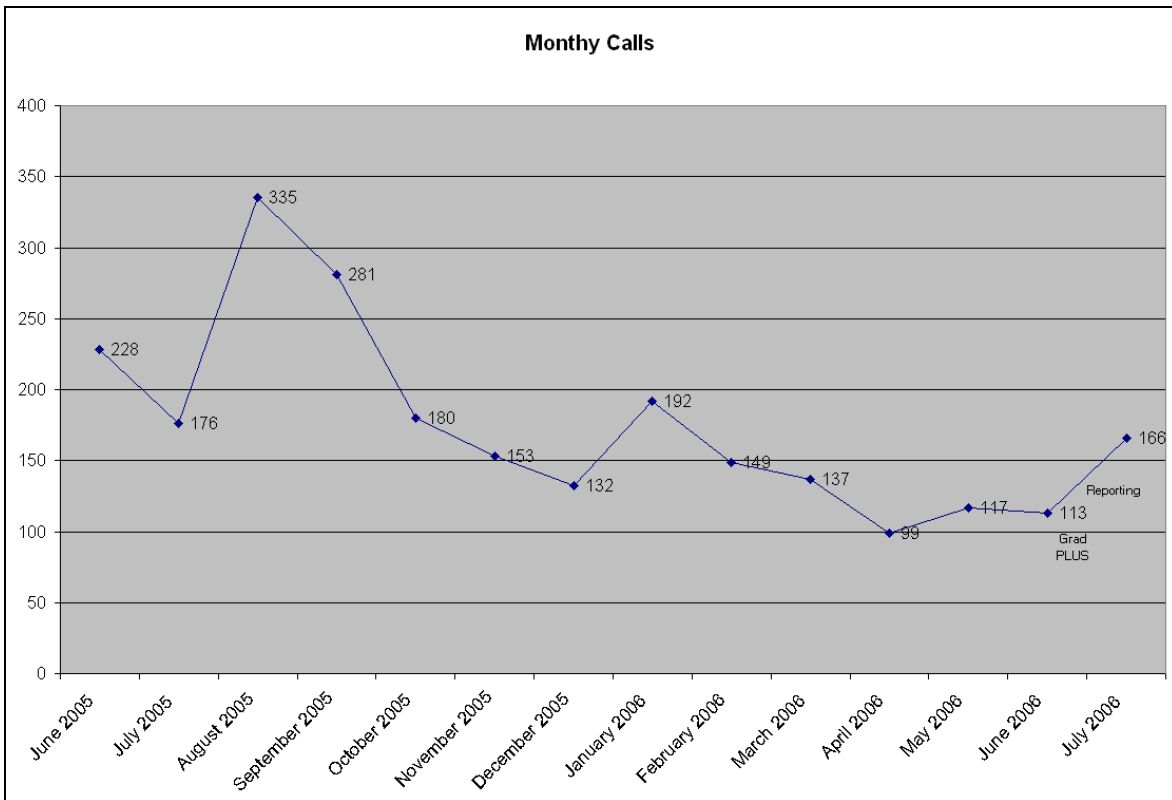


Figure 5. Monthly customer service calls related to training.

Critique

Benefits to ELM Resources and Clients

Overall, the addition of the web-based tutorials as part of ELM’s training program has been beneficial to ELM. The training staff reports that training efficiency has increased. In 2005, each trainer was given responsibility over 806 learners. This rose to 826 in 2006 and 1,194 in 2007, as new clients began using ELM. There was no increase

in the training budget during this time. One could expect from this information that learner satisfaction and training staff job satisfaction would suffer.

However, the opposite was true. Customer surveys collected by ELM during this time indicated that the percentage of learners who were satisfied with ELM's training services rose from 78% at the start of the project to 97% at the end of the project. There is a positive view of training generally and enthusiasm for the tutorials specifically. Learners see these changes and the resulting additional resources as a major gesture by ELM to create a user-friendly product and service—and that ELM is receptive to their needs. This gives ELM a competitive edge. According to the director, "One thing ELM is now doing that the other platforms do not seem to provide is training whenever the school wants it or needs it—the word is out there and getting around."

In addition, there are high satisfaction levels in the training department. A job satisfaction survey was distributed at the end of the project. This was anonymous, although the respondent did report which department they worked in, and indicated that the highest levels of satisfaction were found in the training department. On the engagement portion of the survey (including questions about whether, for example, the respondent would continue working at their department at ELM, and whether they would recommend ELM to others), the training department reported a 97% positive response, compared to 68% companywide.

Besides monitoring job satisfaction through surveys, the time spent traveling was monitored by the director of training in order to avoid trainer burnout. She indicated that more than seventeen days a month spent in traveling or training away from the trainer's home office would indicate that a trainer had too heavy a workload and that the director

should consider reassigning learners or hiring another training specialist. Since the implementation of the tutorials, the number of days spent away has not exceeded the maximum of seventeen days. She also notes that since the implementation of the tutorials, there has been no employee turnover in the training department—no one has quit. Essentially, more learners were being served without increasing the money spent, sacrificing the perceived quality of the training, or overextending the training staff.

The director of training particularly noted that the tutorials are scalable in terms of cost. Each face-to-face training session costs an average of \$460 (including travel expenses), while each Web conference costs \$38. These costs are incurred every time a new session takes place. The tutorials, however, do not incur a cost every time they are used, since the costs involved are the purchase of software and the time spent by training staff in developing the tutorials. At the beginning of 2008, the training staff have estimated (based on the number of Web hits divided by the number of tutorials and by the original costs of the license and development time) that the average cost of each tutorial was two cents (with the cost expected to reach one cent before the end of the year).

Learners have indeed been using the tutorials, as demonstrated by statistics showing the hits on the tutorials page. The numbers of hits increased steadily after the implementation of the tutorials and are remaining high.

There has been a positive impact on learning since the adoption of these new training methods. A definite decrease in Help Desk calls related to training issues has been reported. It is difficult to determine how much the web-based tutorials contributed to this but, in the staff's opinion, these have been one important part of the change—in other words, part of a package of training methods now offered.

The tutorials have been also helpful in crossing a cultural gap. ELM Resources serves schools not only within the fifty states but also in Puerto Rico. In the past, language barriers have created some feelings of isolation in the learners in this area. However, the staff has noted that the web-based tutorials are less dependent on language than other forms of delivery. Instead, the learners watch the process being demonstrated in an environment that they will actually be using.

In addition, the tutorials, along with the other delivery methods, address a cultural need in places such as Puerto Rico. According to staff members, learners from this area especially desire what they describe as “a collaborative environment.” The current training program includes not only face-to-face training and web conferencing but options such as the web-based tutorials and Ask-a-Trainer that can be used at any time. The trainers report that this has created a network of learning supports and a feeling that they, the learner, are part of a cooperative community.

The trainers have also reported that the tutorials have been useful as a “faux hands-on environment.” Since the data in the actual ELMNet is extremely sensitive, the training department has not been able to use it in their sessions. Meanwhile, a more authentic hands-on training environment is not possible for ELM as of yet. However, the trainers have been able to incorporate the tutorials into training sessions—including having learners run through the self-test portions as practice—to allow learners a more authentic experience. The tutorials, in other words, are being used both in and out of the classroom.

Limitations

The first limitation in this project had to do with the fact that there was some initial difficulty in introducing the tutorials. This was because the tutorials were placed in a fairly obscure location on the website. At first, some of the learners were unaware of this resource. They did not find the resources primarily by exploring ELM's website, but were introduced to them mainly through face-to-face training sessions. However, usage has gone up significantly over the past several months. This may be due to moving the tutorials to a somewhat easier-to-find location, the trainers' use of the tutorials in training sessions, and word-of-mouth amongst schools, lenders, and customer service representatives. Usage statistics also show that a much larger number of hits are made on the page containing the tutorials than on the page leading to it, suggesting that learners are going directly to the tutorials, probably bookmarking them to come back to later. While this problem seems to have corrected itself earlier, better website placement would have solved it earlier.

A second limitation is that ELM does not currently have an assessment program in place to allow the collection of much in the way of data on learning outcomes. One could surmise from the lower number of Help Desk calls related to training that the current training has had an impact, but it is difficult to isolate what elements of the training program contributed to this decrease and to what extent. With greater time and resources to travel to client sites and collect information of the effectiveness of ELM's training, more data on learning outcomes could have been collected by asking learners to view a tutorial, then complete the related process in ELMNet.

A third limitation was the relatively small budget. This limited the training department to creating tutorials without the assistance of experienced programmers. If ELM's training department had had greater resources, Flash or another application could have been used to create a richer, more authentic simulation environment rather than relying on the easier-to-use but limited Captivate. Alternatively, ELM's technology department has discussed the possibility of developing an authentic hands-on environment using the same technology that was used to create ELMNet—in effect, a second ELMNet without the sensitive data. Learners could explore in this environment without the risk of canceling or modifying a college student's financial aid. If this had been available, the tutorials could have been followed up by a series of exercises to be completed in the hands-on environment. However, this was, and still is, in the distant future, due to time, cost, and organizational factors.

The Creation Process

The staff reports that overall an application such as Captivate is easy to learn, making it a good tool for a small training department that wishes to develop in-house web-based training. They do report encountering some quirks in the application, though these tend to be moderately easy to overcome, especially as the training staff gains experience in development. The training staff has also found that they can create a few tutorials, then use these as templates in developing further tutorials. It is also helpful for the Director of Training to review and edit the tutorials before uploading them to the website to control for consistency and quality.

The Director of Training found that some trainers had greater ability in developing the tutorials than others, and that some greatly enjoyed the development

process while others preferred to stay out of it almost entirely. The current process allows trainers the freedom to choose their level of involvement. The process does benefit the trainers in unanticipated ways, from learning new job skills to reflecting upon how they train to keeping current with changes in ELMNet.

Development has been much easier and quicker than originally expected. This is due in part to the use of design templates which were developed for the earlier tutorials. The use of materials from manuals and training guides to develop the basic outline and wording in a tutorial has also allowed for quick development, as has the use of easy-to-learn software.

Future Directions in Training at ELM

The following describes some potential directions that are being considered by ELM's training staff.

The Director of Training has started experimenting with tutorials that are less focused on individual processes and more focused on the overall processes used by ELM Resources and their clients. The Online Training Modules page included three of these tutorials as of late 2006—"Understanding Lender Flow," "Understanding Guarantor Flow," and "Understanding Certification Request Flow." These use both Power Point slides and animated screen captures to demonstrate these processes.

The training department may provide customized tutorials for high-volume clients. These clients are schools that make a large number of transactions through ELMNet on a consistent basis. While ELM is concerned with providing excellent training services to all its clients, this would allow ELM to more efficiently serve those who use ELMNet on a more frequent basis.

Captivate, while being a good and easy-to-use tool in developing the tutorials, has some limits in its capabilities. There has been some interest expressed in introducing Flash animations in selected tutorials. However, Flash has a higher learning curve, meaning that it is less likely that all of the staff will gain competency in using it and that one or two may have to act as experts in creating tutorials in Flash. The training staff has also indicated a strong interest in learning more about how to integrate PowerPoint into the tutorials.

Adding narration to the tutorials was originally seen as a negative, since many of the learners would have been viewing them at their desk in the middle of a school financial office, and the additional sound from the tutorial might be distracting. However, when learners at a conference were asked whether they thought sound would be helpful, over 90% of respondents replied that it would be helpful. The staff feels that the addition of sound (as an optional feature) could be a plus, since it would allow learners to listen to explanation, as well as see and participate in the demonstration, thus reinforcing the learning process.

In late 2006, a tutorial was created by the director using voice narration. This was done using minimal recording equipment, and sound editing in Captivate was relatively easy to learn. An interest has been expressed by both learners and trainers in the development of further narrated tutorials. In addition, short video segments have been considered. Adding audio and video elements may lend a human touch to the tutorials.

In a broader view of ELM's training department, the staff intends to continue to be on the lookout for new delivery methods. Examples of possible new technology to be used are podcasts and webcasts. Not all new methods are technological, however. For

instance, the staff has been and is still looking for ways to reach Spanish-speaking clients, including the development of tutorials and written materials in Spanish.

With the positive impact of the transitions made to ELM's training program, the training staff is eager to try more innovation in the way they train.

Conclusions

The use of the web-based tutorials has been received in a highly positive manner. However, it is only one part of a more comprehensive training program. According to training staff, there was fear in the beginning from the learners that these would take the place of face-to-face training. Once the learners saw that they now had many options, they were satisfied with, even excited about training. In addition, new clients began using ELMNet due to its training options with at least one school choosing ELM *because* of the web-based tutorials.

Schedule

Table 1 shows both the estimated and actual timeline for this project. I began discussing the project with ELM's Director of Training in February 2005. By the end of April, we had settled on the design of the basic template and the software for the project. In May, the training director received training in the use of the software for this project. Soon after, in the same month, she trained her staff on the software and publishing standards.

The initial fourteen tutorials were developed during May and June. Each of these tutorials took one work day (eight hours) to complete. The tutorials were posted on the Internet as they were completed. However, the official implantation date was in August, when the tutorials were announced to school staff and lenders at a conference.

The Director of Training had hoped to finish the first 100 tutorials by the beginning of 2006. The development time proved to be shorter than the estimate, with each tutorial taking two hours to complete, half of the estimated time, and the first 100 tutorials were completed well ahead of schedule. The shorter development time is due to the use of templates developed for the first tutorials, the ease of use of the software, and the use of existing documentation to create outlines for the tutorials.

Table 1

Estimated and Actual Milestones for the First Hundred Tutorials

Milestone	<i>Projected delivery</i>	<i>Actual delivery</i>
Concept proposal	February 22	February 22
Template design complete	April 14	April 17
Software recommendation	April 28	April 27
Captivate training for the director	May 9	May 9
Captivate training for specialists	May 12	May 12
Development of first 14 tutorials	June 30	June 30
Official implementation	August 10	August 10
Completion of 100 tutorials	January 1	November 20

Budget

The expenses for this project were few, as shown in Table 2—seven software licenses and trainer salary for development time—and costs were relatively low. The actual amount spent on materials matched the estimate. However, the actual amount spent

on personnel was significantly lower, and the overall cost was about \$5,300 less than the estimate. The lowered costs are due to the shortened development time of the tutorials, which in turn was due to templates, software, and existing documentation mentioned in the section entitled Schedule.

Table 2

Estimated and Actual Expenses for the First 114 Tutorials

Expense	Units		Unit rate	Cost	
	Estimated	Actual		Estimated	Actual
Personnel					
Development (initial tutorials)	112 hours	112 hours	\$26.50/hr	\$2,968	\$2,968
Development (later tutorials)	400 hours	200 hours	\$26.50/hr	\$10,600	\$5,300
Materials					
Software	7	7	\$500/license	\$3,500	\$3,500
Total				\$17,068	\$11,768

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APPENDIX A

SCREENSHOTS OF THE TRAINING TUTORIALS



Figure 6. This shows ELM's original Training Modules Homepage. The tutorials are grouped into categories. At this early stage, there was no additional navigation and learners would simply scroll down the page to find the applicable topic.

Demonstrations

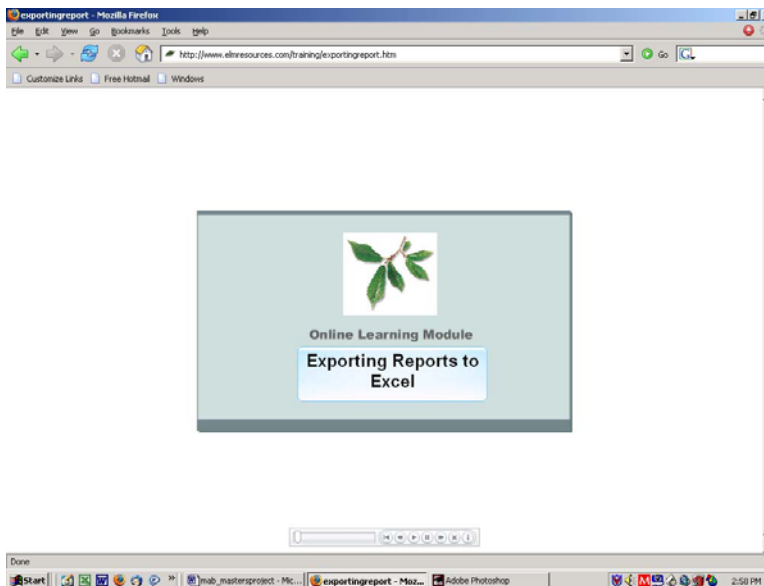


Figure 7. Beginning Screen of a Demonstration. Once the learner chooses a tutorial, the tutorial appears as an embedded (as opposed to a pop-up) Flash demonstration.

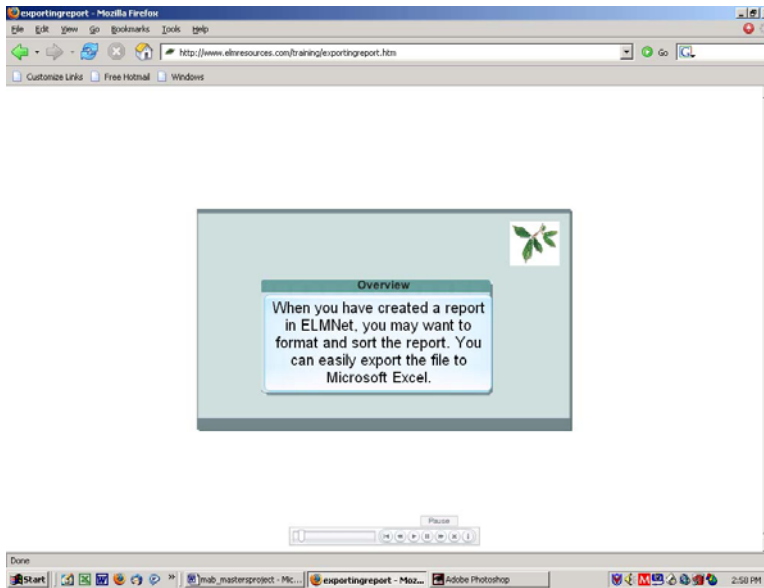


Figure 8. Overview and Rationale of the Process Demonstrated. First, the learner sees a brief overview of what the process does and why the school employees and/or lenders would use such a process.

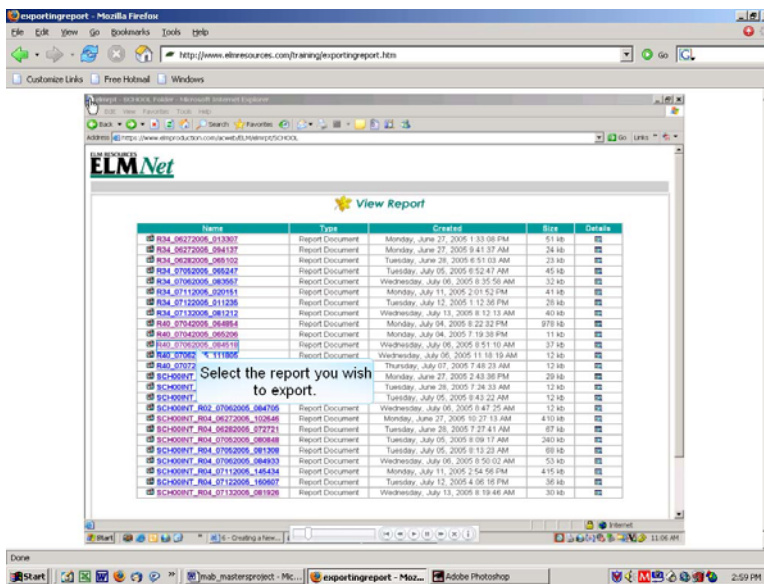


Figure 9. An instruction is given for a step in the process.

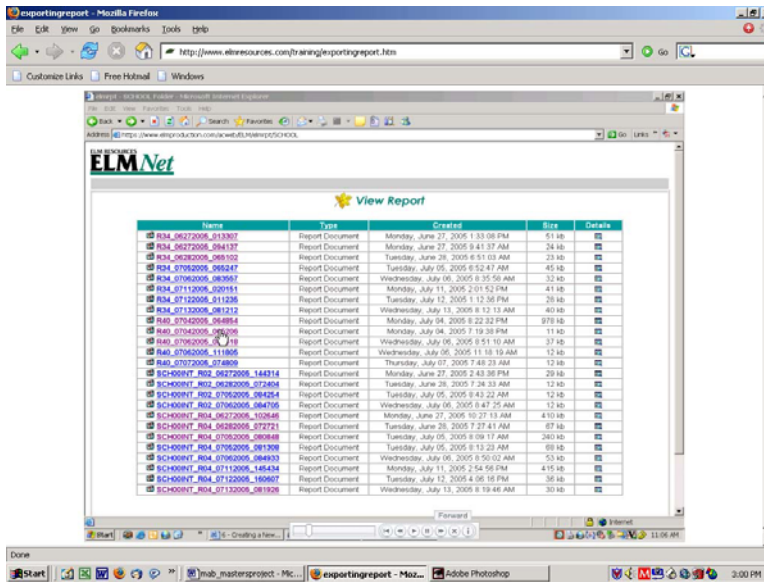


Figure 10. The step is demonstrated. At this point, the learner is a passive viewer.

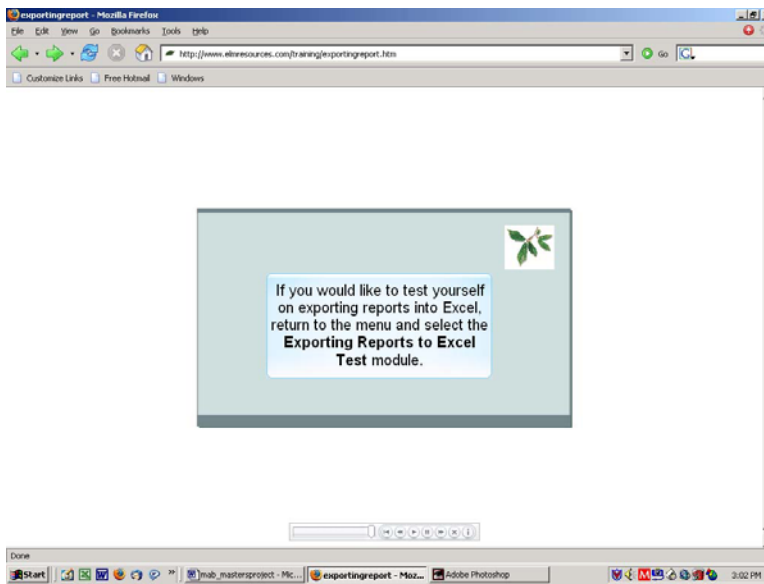


Figure 11. At the end of the demonstration, the learner is invited to review what they have learned in the demonstration by returning to the main Training Modules page and choosing the accompanying simulation.

Simulations

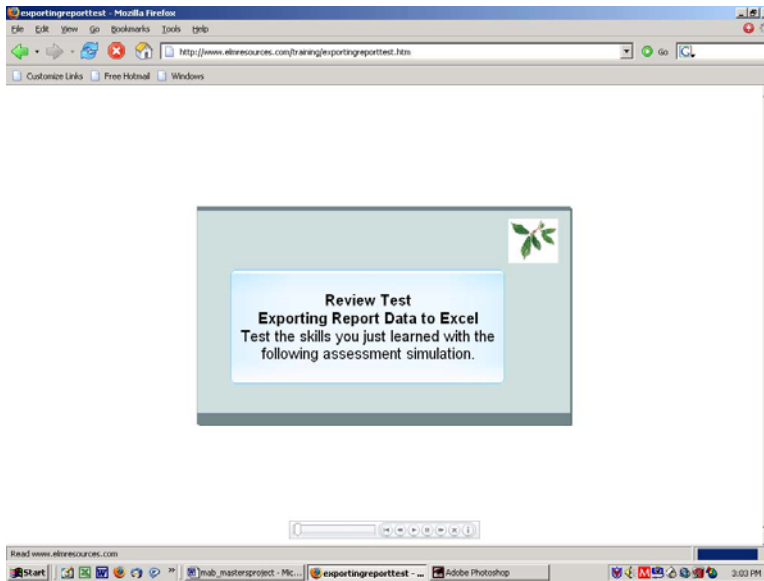


Figure 12. Beginning Screen of a Review.

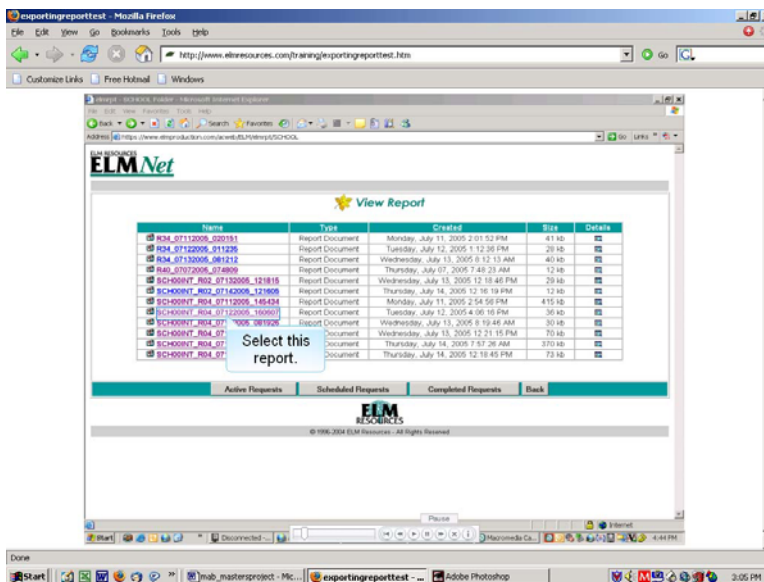


Figure 13. A caption box prompts an action by the learner.

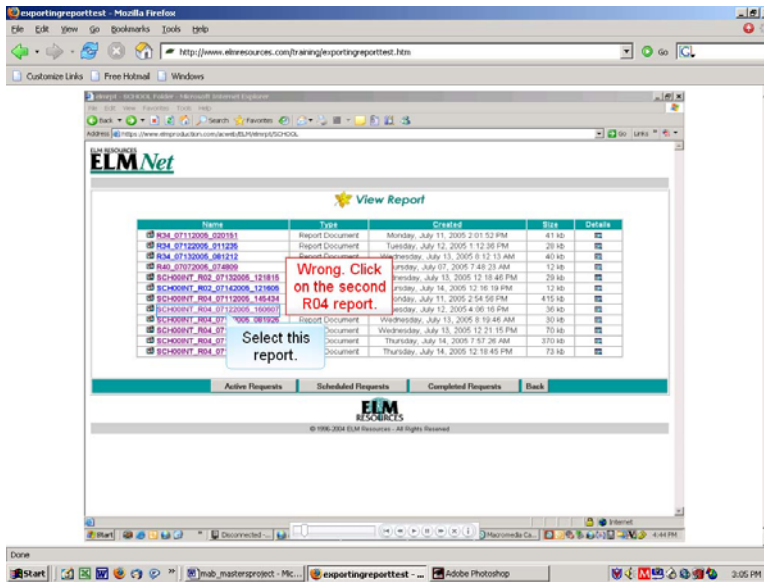


Figure 14. Response to an incorrect action.

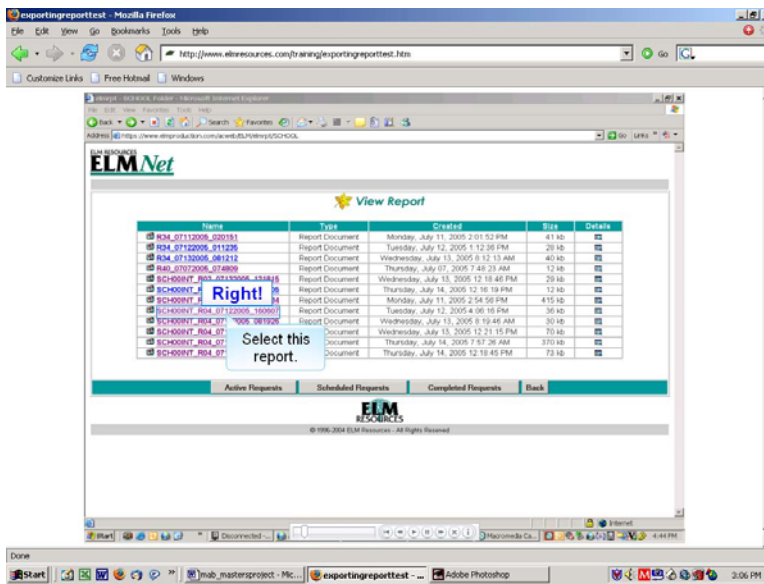


Figure 15. Response to a correct action. The review continues to the next step.

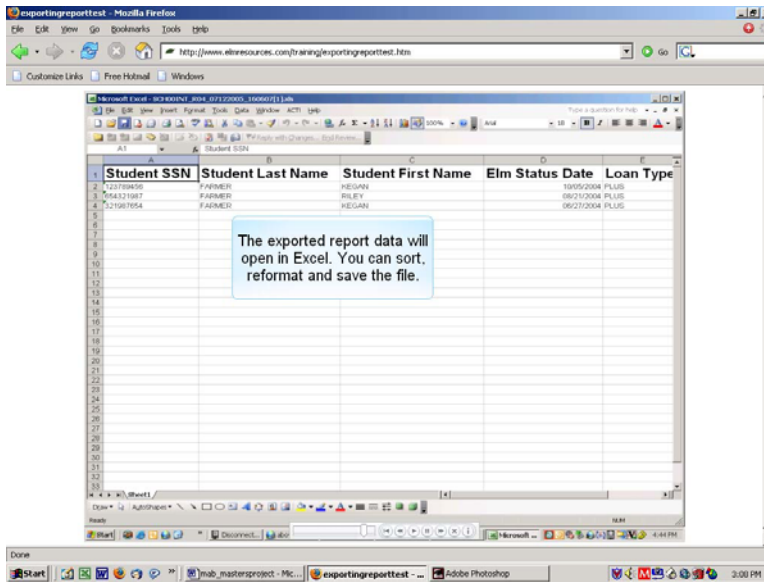


Figure 16. At the end of the review, a caption informs the learner what would happen at the end of the process.

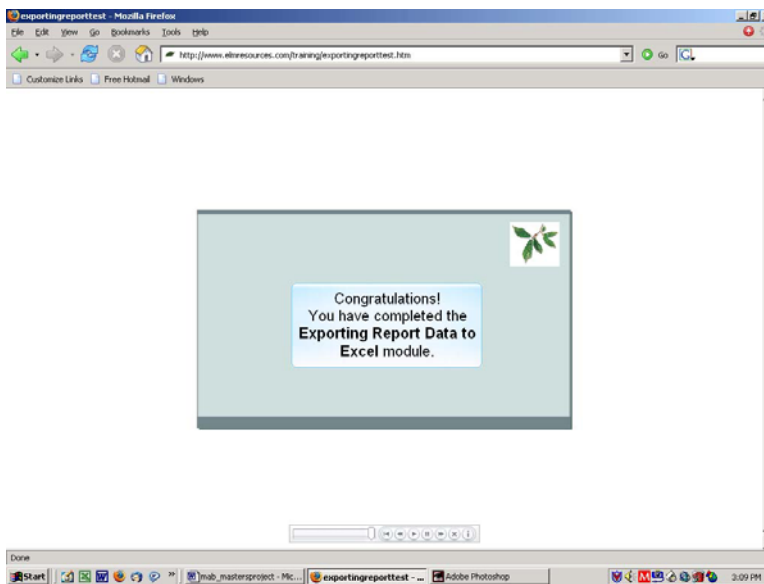


Figure 17. Completion screen of a review.

Recent Changes to the Training Tutorials



Figure 18. This shows the recent addition of navigation to differing categories as part of a sidebar.

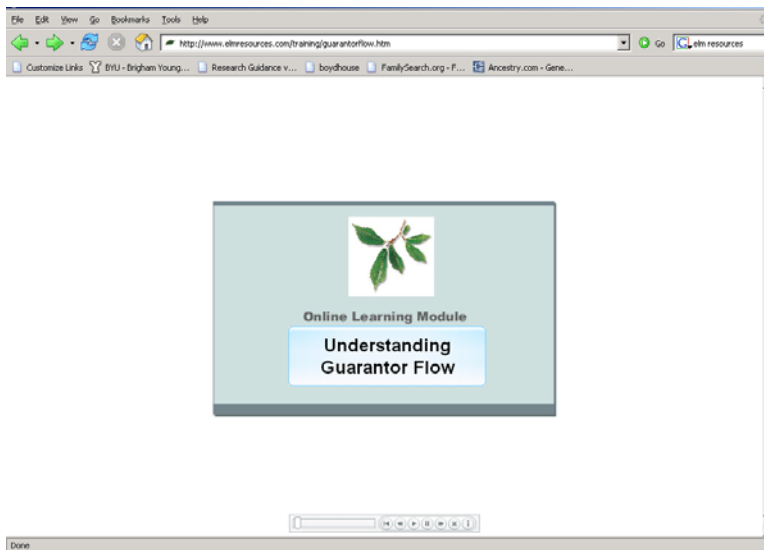


Figure 19. Besides just showing specific processes, ELM's Online Modules page now includes tutorials showing overviews of the major processes by ELM and its clients. Unlike the specific processes, these tutorials do not include a follow-up simulation.

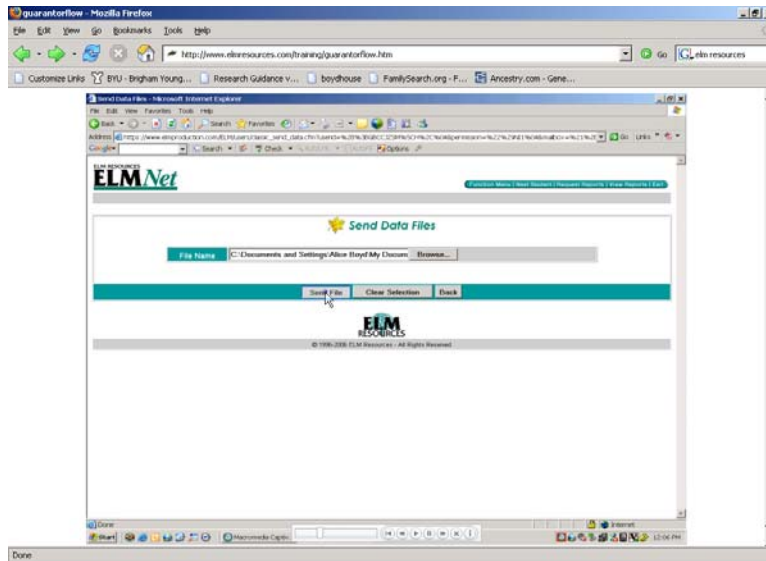


Figure 20. These make use of the screen capture and animation capabilities of Captivate, as have been seen in previous tutorials.



Figure 21. However, they also use PowerPoint slides to teach the parts of the process that would not lend itself to screen capture. Here, an animated slide demonstrates the transmission of data from one organization to another.

APPENDIX B

EVALUATION INSTRUMENTS AND FEEDBACK

School Staff Survey and Feedback

Distributed at a Conference, May 2006

Have you had an opportunity to use the online tutorials?

Yes-64% No-36%

How helpful are these tutorials in helping you better understand how to use ELMNet?

Very helpful-90% Somewhat helpful-10% Not very helpful-0 Not at all
helpful-0

How useful is it to be able see the processes demonstrated for you?

Very useful-87.5% Somewhat useful-12.5% Not very useful-0 Not at all
useful-0

How useful is it to be able to practice the processes using the Test Your Knowledge sections?

Very useful-93.33% Somewhat useful-0 Not very useful-6.67% Not at all
useful-0

Would it be helpful to add voice narration telling what is going on in the demonstration?

Very helpful-26.67% Somewhat helpful-66.67% Not very helpful-6.67%
Not at all helpful-0

Would you like to see more tutorials made available for your use?

Yes, very much-62% Yes, somewhat-31.25% Neutral-6.25% No, not
really-0 No, not at all-0

What did you like best about the tutorials?

1. Easy to use - helpful!
2. See exactly the way it works - pacing so learning process progresses well
3. Opportunity to test my understanding
4. Simple and short
5. Flow and time
6. The ease of them and shortness.
7. Many choices
8. Quick overview to refresh knowledge base

Least?

1. Nothing really
2. A little boring
3. No sound
4. Too much is typically missed in the learning process when it is not live or
interactive

Do you have any suggestions to help improve the tutorials?

1. No
2. Adding sound would be a good option for some people.
3. Eventually more specific
4. I think if voice narration & ability to go faster or slower [*were added, it*] would be good.
5. Continue to add to them.
6. More dynamic usually.
7. I was never made aware that there are tutorials available.
8. Provide animation and interactive capabilities to keep attention and clarity first & foremost
9. Continue to upgrade/enhance on a timely basis so the tutorial remains a valued tool
10. Strongly support a "hands on" training environment to emulate the various functions and understand both school and lender/service functions on ELM.

Lender Survey and Feedback

Distributed via email, 2006

What impact has the training department had on how you feel about ELM?

1. The training department has given all users of ELM more confidence in the product and more options on how to learn to use ELM. With the setup of a webex training, followed up by an in-person training, there should be no reason the school does not know how to use the system.
2. I know that I am very happy to have the training department. It gives me more confidence in ELM's ability to communicate and keep staff and partners up to speed on changes. It has really helped me train some of my new staff members on ELM as well. I know that my Sales staff appreciates *[the tutorials]* as they have done significant ELM training and demos in the past for our ELM schools. We have a very large number of them. It also helps us to sell ELM more comfortably knowing there is help and training for new schools.

What are we doing right?

1. The written resources in both the manual and the on-line tools are fabulous. The manual with illustrations is very easy to use and clearly shows how a function should work. On the self paced training, the ability to test yourself after taking the course is critical.
2. The face-to-face training sessions, the web ex sessions and the online tutorials are great. You have really looked at several options for providing convenient training and for different levels and skills.

What would you like to see us do better or do more of?

1. The only thing I can think of is to add more follow up with the schools after they have been using ELM for a while. The turnover at the schools is very high and we can't be sure the person who is leaving the school and training their replacement is giving them the complete training they need.
2. I think that you are doing a great job and would just like to see you keep up the good work. Maybe a bit more focus on the getting the word out about upcoming changes and features. Those are most important to me as a fairly savvy ELM user.”

We had a lender here who mentioned that she saw training as one of our competitive advantages. You have a better base for comparison. Is that true?

1. I would absolutely agree with that assessment. It didn't used to be that way, but it is now. Other large loan providers don't do a very good job of transitioning schools to their product and providing training to the schools.
2. I believe that all of the options and the breadth of your training capabilities is an advantage over several competitors. While many of them offer initial training or guides, they do not have all of the tutorials or additional communication and training of new features.
3. One of the key differences between ELM and other providers (for new schools) is the AMAZING level of support during Implementation and Training periods. I would stress this. Many schools were "dumped" into [*a competing system*] and

felt completely abandoned. Stress the many, many forms of training that are available (another major difference).

4. Recently I've spoken to some schools that have used, or still use, [*a rival company*]. They did mention that they liked having the initial set-up of the system done for them. However, they were/are disappointed that once the initial set-up was complete, there is no further training offered. They felt that ELM has an advantage for this reason. They like the on-going training that's offered and all the online resources. With ELM, they don't feel as if they're left to 'sink or swim,' as one person so eloquently stated it. I'll just add that from the lender side, I've heard time and time again, 'The problem with [*the rival company*] is it's not really "open."' I'm a tad bit foggy as to what they mean by this—however, I've heard it from several people. Typically, the having no support after set-up follows.

Trainer Survey and Feedback

Distributed via email, 2006

Do you feel these tutorials are useful in helping the learners better understand ELMNet?

1. Absolutely. They can focus on one particular function of the system, and review the function as often as they like.
2. I think the tutorials are useful in helping learners better understand how specific functions within ELMNet work. I don't think they help learners understand how ELMNet itself necessarily works. In other words, if someone wants to understand what ELMNet does and how it works, they would be better off reviewing the overview material provided on our website. If they want to know how to use a specific ELMNet function, the tutorials work very well for that purpose.
3. Users can see a demo of a function that they aren't using, possibly increasing our volume and profitability.
4. I have not had any feedback from any users. The people I have heard during trainings say that the tutorials look like they will be useful. I have no idea if they have been looked at later.
5. Yes, some learners need to see, not read, each screen and what steps are needed to perform a function.

What impact have these tutorials had on ELM Resources as a whole?

1. I believe it gives our users a more favorable impression of ELM, that we want them to succeed in their loan processing.
2. Improved perception of the breadth of ELM's training offerings.

3. Since I have not had any feed back from any users, I am not sure.
4. Shows that ELM wants to grow toward and evolve with the school and their needs.

What impact have these tutorials had on training?

1. The tutorials reinforce the training that we provide. Users can revisit a function days, even months after training, when they need it.
2. Fewer questions directed to staff, freeing us up to train others.
3. Improved perception of ELM's Training Services department.
4. Since I have not had any feed back from any users, I am not sure.
5. Cements and reaffirms the training that was shown to them.

What impacts do you expect in the future based on your observations?

1. Users will have fewer questions about how to use the system, and less frustration using the system.
2. I think as more people try them and as we offer the complete manual in web-based tutorials, questions will be further reduced as our users will be empowered to get an answer independently and in their timeframe. The WBTs make us even more of a virtual company.
3. Maybe refresher trainings will not be needed as often for existing schools' staff members.
4. Hopefully additional schools can be sold on these innovations, and existing schools can rely on ELM to always improve with the latest training environments.

Have they had any impacts not directly related to teaching clients how to use ELMNet?

1. Not that I am aware of.
2. Creating new WBTs has improved my skill set by giving me exposure to a new piece of software (and something to add to my resume).
3. Creating the WBTs has helped me be a better trainer, by reinforcing the idea that not all trainees learn in the same way. The WBTs are primarily visual, and creating them has helped me to be more thoughtful during my training sessions. (If someone doesn't seem to be understanding something, I try to approach the subject matter from a different way.)
4. Users can see a demo of a function that they aren't using, possibly increasing our volume & profitability.
5. Since I have not had any feed back from any users, I am not sure.
6. Nothing I have thought of

How do the learners feel about the tutorials?

1. Most users I have introduced to the tutorials are very excited about them. They are glad to have the reinforcement of what they just learned.
2. I have only had feedback from one school who says they're using them—and they love them. Usually I train new schools or new staff at existing schools—folks that aren't typically familiar with the tutorials when I meet with them.

3. During quick demo's during training sessions, it sounds like the tutorials will be useful and helpful when a staff member needs to know how to do something without making a phone call.
4. Extremely positive. I've gotten cheers and shouts of glee when demonstrating these modules.

How does the training staff feel about the tutorials?

1. Excited. It's nice to leave the school with something that will help them later on, possibly when a trainer is not available to help them.
2. As a trainer, I like them very much. They allow me a different training option and I always include a brief demo as I point out during training all the support users have. There is nothing like telling ELM users that they can get an online demo of whatever they want (which we are working towards) whenever they want.
3. I think they should be encouraged to be used - especially during phone calls to the PSS [*Priority Services Specialist*] or HD [*Help Desk*] staff.
4. It's a great trick that perks-up the learners at the end of the training.

How have you handled the creation of new tutorials? Who creates these? How do you control for quality?

1. The Training Department staff creates the tutorials. The Training Dept manager reviews each one for quality before placing out on the website.

2. I think we should be sharing these with the training staff for feedback in the tutorials before we roll them out to the public. I never received any feedback on the ones I created.
3. Each trainer volunteers to create a tutorial. After completion, Alice checks for quality.

What are the advantages of using these tutorials?

1. Available any time, day or night. Short, no large time commitment.
2. Advantages to ELM:
 - a. They are useful in helping learners better understand how specific functions within ELMNet work.
 - b. Fewer questions directed to staff, freeing us up to train others.
 - c. Questions are reduced.
 - d. Users can see a demo of a function that they aren't using, possibly increasing our volume & profitability.
 - e. It's another training option, which strengthens the breadth of our training.
3. Advantages to ELM's clients:
 - a. Any time, any place (convenience).
 - b. Don't have to call anyone, answers are at your fingertips, in a visual format.
4. No phone calls or emails would have to be made to get the steps to take to carry out a function.
5. Anyone can watch them at their own convenience.

6. Short and can be replayed at any time.
7. Quiet and will not disturb others in the office or area.
8. Learners can review and refresh ELM functions without needing to setup a training session.

What are the disadvantages of using these tutorials?

1. Impersonal, can't ask questions.
2. The tutorials are posted online, but you have to scroll through the entire list to find what you are looking for. More organization to our website's WBT offerings would be helpful.
3. There is no link to them from the online User Manuals—they could be referenced in the User Manual and the Training Guide.
4. The Helpdesk staff does not know about them so they do not point a user to them.
5. The PSS staff do not know to reference them when speaking with a school person that might benefit from them.
6. There are no tutorials for the Lenders/Members doing online updates.
7. The learner cannot ask questions or interact with the trainer.

How do they compare to other methods of delivery?

1. Different. Interactive, yet they can run them any time.
2. More convenient, because you do not have to depend on anyone being available when you are.
3. Format is different, which can enhance the learning experience.

4. They are good to reinforce the information in the User Manuals and the Training Guides and they are good to re-enforce the information in Training Sessions.
5. It's a quicker training method for learners than Webex or onsite. They can have immediate access to training without waiting to get a future date.

Interview with ELM Resources' Director of Training, Alice C. Boyd

Conducted live on June 9, 2006

Do you feel these tutorials are useful in helping the learners better understand ELMNet?

Yes, it allows them to visually see the steps that they need to do to complete the tasks. The visual aspect is important, rather than just having words.

The sales staff is using them as demos to promote the product. Sales is also considering running Captivate demos at a booth at conferences. The Help Desk uses them too; it's hard to describe certain things to the customers over the phone with just words. They have the customers use the tutorials while they explain over the phone. The Help Desk has requested modules based on their needs. The trainers use the online modules in training sessions so the learners know they're there and that they can go back and review what they learned later. ELM has also used them for in-house training, particularly with new staff. Also, we used it when ELM rolled out Timeforce (software used to track time spent on projects) to train employees on the processes they need to know.

The clients say that the competition does not have anything like it. It's a selling point for ELM.

What impact have these tutorials had on ELM Resources?

It gives a positive perception of the training department. We appear to the clients as being more technologically advanced than before. It helps us toward the goal of the blended learning environment that we've wanted and offers more choices to the learner.

It's especially popular with campuses with high turnover rates. They can train new staff on ELMNet without taking much time from other staff. The tutorials have been one tool that has led to a step up in professionalism for the training department, especially in the view of the board of directors.

Any other benefits to training?

It's part of a push to create a blended learning environment and have as many options for our varied clients as possible. Our clients have varied skill levels and this allows them to select from basic to advanced according to their level.

Where do the tutorials rank?

Probably from beginning to intermediate. We keep them generic. We do not have modules based on school-specific tasks.

Any other benefits?

It has helped the trainers' skill levels, as well. They create them and learn more about how ELMNet works. None of the trainers were professional trainers before. They are also helpful when we add new system enhancements. When new features are rolled out, new modules are created. The trainers learn about the enhancement as they work with the new module.

Also, right now, because ELMNet is a production environment with real and sensitive data, the learners can't do hands-on training. During a session, a trainer may ask

one learner to come up to the front and try out the task being taught in front of everybody else. We don't have a dedicated training environment yet, so everyone can get hands-on practice. Now, the trainers have another option. The tutorials add the missing kinesthetic component back in. For now, they are as real as it gets in a training setting.

What do you think of software such as Captivate as a tool?

I'm very pleased. It's easy to use, easy to teach, and easy to learn. There's no steep learning curve. It's also a good price. You don't have to have one expert programming all the tutorials. Because it's easy to learn and inexpensive enough to have multiple licenses, you can have several people making modules at the same time.

Are there any impacts *not* directly related to teaching clients to use ELMNet?

Again, there's the uses Sales has come up with and the Timeforce training. There's also a possibility that we might use it to train employees on security procedures when working with the data in ELMNet. Also, we might be able to use it to capture new tasks. Instead of implementers trying to explain the new task to the trainers, they can just perform the tasks while recording their movements in Captivate. The trainers can then watch the Captivate file and use it to prepare themselves to teach it or write documentation for it. When we add new features, staff members are using the tutorials to learn the new features.

How do the learners feel about the tutorials?

There's been an extremely positive reaction to them. Simply having them there is a plus. They're seen as simple, short, easy, and another option. There's also been a positive reaction during sales presentation, as well. And when they are used in training sessions, the learners know that the trainers are leaving something behind for them to help them remember what they learned in the session.

How does the training staff feel about the tutorials?

They like them; there's been a positive reception. They've gained a new skill—creating modules in Captivate. Some enjoy the creation process more than others. It's been interesting to note, too, that the development of the words for the tutorials is not as hard as anticipated. Often, we use what's already in the documentation—in the manual.

Something else that the staff likes is the fact that they can leave something behind at the end of a training session.

How have you handled the creation of new tutorials? Who creates them and how do you control for quality?

It started with me. I learned to use Captivate with the help of a graduate student in instructional design and then made several modules. After I did that, I held a WebEx [a phone and video conferencing service] training session for the training staff, both to teach them how to use Captivate and create the modules and to give them information on the publishing standards for the tutorials. The publishing standards were needed to create a

consistent feel and level of quality for the tutorials. These were also documented in the Training Procedures and Policies Manual.

After the WebEx session, a chart was created of all the tasks for which a module was needed. A trainer signs up for the module that they wanted to create, they create it, then they mark it off on the chart as complete.

The module is sent to me for quality control. I check each module for clarity, correctness, consistency, and adherence to the Policies and Procedures Manual. I will make modifications myself, unless major revision is needed, but usually, only light modifications are needed. The module is then sent to be published on the ELM's website. It usually takes about a day to get it published on the Web.

There are no announcements for each new module. There was some PR to announce the tutorials on the website when they were very first made available, though.

What are the advantages of using these tutorials?

They're visual and easy to use. They provide an option for those who learn in different ways—one of the best that we have for kinesthetic learners. They are also short. They can be used in the small periods of time that the clients have available. They are also targeted to individual tasks. The learners can select the relevant task and they don't have to sit through a three-hour session to learn the one task that they wanted to learn. It

also provides a technological look and feel to the training program, which given what ELM does, inspires more confidence in the clients.

Also, with these modules, you get a lot for not very much. We bought five or six licenses for \$2,500 to 3,000 and have created about sixty modules in under a year while performing the other tasks that are part of our job.

What are the disadvantages of using these tutorials?

You lose the personal touch that you have with the onsite and, to a lesser degree, the WebEx training sessions. You can't ask questions with the web-based tutorials. Also, some learners are auditory learners—they do better when they can hear as well as see and do. The tutorials currently have no auditory component. However, we plan to add that option sometime in the future.

What other methods of training do you use besides the web-based tutorials?

There's onsite training. The client requests training and one of the trainers travels to the site and deliver training face-to-face. There's also WebEx training. A trainer and the learners connect through a conference call and online using WebEx. Note that we currently don't have a hands-on environment that can be used in the onsite or WebEx sessions. There are also written materials—manuals and Quick Start cards [job aids]. Each manual is geared toward the learner type. There are user manuals, which have more in-depth information and are used as a comprehensive reference. Then, there are the training manuals, which are slimmed-down versions of the user manuals and are more

getting started guides. We also just began using just-in-time training, or Ask the Trainer. The learner fills out a form online with their specific question, which is then sent to a trainer, who responds within 24 hours. This is useful for questions that the client doesn't feel merit a call to the Help Desk. We are also looking at adding podcast modules. *[These podcasts would mix video with Captivate screen captures and be made available to learners as a way to update them on new features, etc.]*

What is the history behind the creation of these tutorials?

Before WebEx was adopted, ELM did not have a training department. There were customer support managers, or CSMs. However, this did not work out because the CSMs had been committed to return calls within fifteen minutes and were expected to travel to client sites, which meant there was often a conflict of these expectations. Training was funded and requested in late 2004. Four CSMs became trainers and in February of 2005, I was hired as the director of training, having had an extensive background in training. I noticed early on that four trainers were expected to provide training to about 1,200 clients throughout the US. This seemed to stretch the training staff a little thin. In effort to help boost the training staff and provide more training opportunities to the clients, the tutorials were developed as one solution.

What do you want to do with the tutorials in the future?

Document all the functions of ELMNet for one. Also, we should expand to other uses for the Captivate software, such as using it to capture the developers' actions to help develop training on new features or training new staff. Also, at some point, Spanish

language support could be added to expand the number of learners we can reach through these tutorials.

I would like to add an auditory component as an option in the tutorials. We had originally planned on not having that because the learners would probably be viewing them in the office and the sound might be disruptive. But I think that some of the learners would benefit from being to hear the instruction, as well as read and view it.

Do have any additional information that you would like to share?

I have heard no negative comments about the tutorials, only positive. The biggest challenge is letting people know it's there. With its current placement on the website, where it's not easily found, that's a little difficult.