

Engineering for Rapid

Pat Alvarado

As the speed of business accelerates, so does the need to decrease the time it takes for knowledge from a subject-matter expert (SME) to reach the learner. In typical learning design and development processes, the SME provides content to an instructional designer, who then adapts the content into a format suitable for learning.



Principles E-Learning

Now, the inclination is moving toward having the SME develop e-learning content for learners' direct consumption. Rapid e-learning is seen as a way to satisfy this business objective.

Rapid e-learning is basically the quick development of e-learning by SMEs, using tools and templates that are already instructionally designed. The instructional designer is not totally removed from this process but, in fact, plays an essential role in creating the templates and assisting the SME.

This approach certainly is vulnerable to criticism for being a short cut in the instructional design process, however, the business need to educate employees quickly on new and changing products and services typically far outweighs concerns about quality. This creates a challenge for training professionals: to implement the most effective tools and templates for SMEs to develop e-learning faster, better and cheaper.

The key to shortening the development cycle while producing highly effective e-learning is to use a framework that is easy for SMEs to use and is designed to have much of this process already completed.

Using the Tools

There are many rapid e-learning tools already available, and these tools address ease of use. For example, BrainVisa's RapideL tool uses Microsoft Word storyboard templates to create an e-learning course, and it uses macros to dynamically generate Flash-based modules. The templates include fields that are clearly defined for such content as the page title, on-screen text and media. It is easy to insert text, graphics and even audio using the Insert menu in Microsoft Word. Therefore, the content is up to the SME and as with any other application, it is wide open to whatever the author decides to include.

Software Engineering Basics

Creating e-learning is very much like creating a software program. Applying some software engineering principles to rapid

e-learning can help produce prompt and consistent results while attaining the goal of faster, better, cheaper.

The primary goal of software engineering is to produce a result that solves a problem. The software-design process follows the basic steps of defining requirements, producing a design, developing the code, testing the solution and releasing it to users. The instructional design process is similar: defining objectives, producing an outline or storyboard, developing the materials, piloting the training and releasing it to learners.

So, applying software engineering principles (in addition to instructional design basics) to the framework can ensure the quality of the e-learning without compromising the speed of creating the course. These include clearly defining requirements, establishing coding standards, and testing usability and functionality. The combination of these principles can lead to engineering "learnability" right into each deliverable to quickly generate effective e-learning.

■ **Clearly Defining Requirements.** The most important component of any project is the requirements. The requirements define the expectations of the product's user (in this case, the

Table 1: Questionnaire Grid

Function	Rating	Suggested Focus
Navigation	1 2 3 4 5	Was it clear which button to press?
Response Time	1 2 3 4 5	Did the response seem timely?
User Interaction	1 2 3 4 5	Was it easy to figure out how to do something?
Graphics	1 2 3 4 5	Are the graphics clear? Do the graphics actively enhance the teaching points?
Video	1 2 3 4 5	Is the video clear and smooth? Is the audio is clear?
Animation	1 2 3 4 5	Is the animation clear? Are the teaching points of animations clear?
Pop-Ups	1 2 3 4 5	Are pop-ups useful or interruptive?
Test Questions	1 2 3 4 5	Is it easy to use the test?
Help Screens	1 2 3 4 5	Is help easy to find? Are help screens useful?

in practice:

Spartan Stores: Ringing versus Rapid Learning

Anyone who's ever been thrown on cash register duty with little or no training knows it could benefit from quick yet thorough, standardized instruction — ringing up everything using the "sundries" button is not going to get you through in the long haul.

Recognizing this, Spartan Stores, a grocery wholesaler and retailer that supplies and runs 90 grocery stores throughout Michigan, implemented a learning management system (LMS) about four years ago.

Randy Elders, manager of performance support and career management, said Spartan Stores decided to implement an LMS to address the issue.

"Basically, the realization that we have disparate locations geographically across the state, and we have a lean team to administer and help delivery training — the function of those two demanded an LMS," Elders said. "We needed something that we could deliver to each store, maintaining some level of control without tying it to a person to go deliver it."

Spartan's e-learning system was engineered with this in mind. In all its stores, the company installed at least one PC dedicated to e-learning. From that machine, employees are able to Web link to training designed and administered by LearnShare that is branded as Spartan Stores.

"Employees think that they're still in what we call 'The Neighborhood,' our intranet, but actually they're reaching out across the Net," Elders said.

From there, Spartan Stores uses its LMS for a range of different training purposes. The first and most obvious is in orienting new hires, giving them the history of the company, its values, strategic direction and approach to customer service.

The second is job-specific training, which is useful in positions that see a high turnover rate such as cashiers. Spartan's LMS is particularly integrated at this point.

"We've created a program that simulates the cash register," Elders said. "So, they have a keyboard that's like the cash register keyboard going through a program that's delivered from the LMS. The user goes through and learns how to cashier, how to use the register and the different functions for different types of products."

This also standardizes the training process at the register, which is important to Spartan Stores.

"You can imagine if everyone trains a little differently, and everybody has their own tricks or techniques, then every store has cashiers that are operating differently," Elders said. "The LMS gets everybody the same experience, learning the same way and shrinks the time down."

Spartan Stores administers an LMS for bagger training, as well. Elders said he realizes using a sophisticated e-learning module for something seemingly as easy as putting items in a bag might seem a bit strange, but it's still necessary.

"It seems like a simple thing, but if you've ever come home with groceries, and your bread is on the bottom and crushed, and your eggs are cracked, then you're ticked off at the store," Elders said. "So, it is important to us and to our customers."

A third way Spartan Stores uses its LMS platform is in compliance-oriented training.

"The system tracks completion of the course and testing automatically because each individual has to log in with his or her own ID," Elders said. "That gives us our training records for specific safety programs or food safety compliance."

Reaction from Spartan Stores' staff to the LMS has been positive, Elders said, particularly in cashier training.

"It used to take them hours and hours or days and days and tied up another resource," Elders said. "Now, employees can sit down at their own pace, and it frees up the instructor."

On the company's administrative side, Elders said managers are pleased with the LMS because it significantly reduces compliance training paperwork.

"All the paper shuffling of trying to keep records of who's taken the training and who still needs it and how do we prove that — when it's automatically logged, you deliver it to the person," Elders said. "It's in their development plan, they can see who's finished it and who hasn't and send out appropriate reminders, and then the record is there permanently."

— Daniel Margolis, dmargolis@clomedia.com

learner) and establish the learning objectives. Providing the SME with clearly defined objectives for each module functions as a guide for maintaining focus on the purpose of the content. This might seem obvious to everyone involved, but having short bullet-point objectives clearly documented in the framework will help keep the SME on track and aligned with the objectives. It also helps avoid delays involved in asking questions and awaiting responses.

This simple yet important principle frees SMEs from worrying about what they should write, and it allows them to simply focus on sharing the necessary knowledge. Defining a clear path for them can accelerate the process and shorten the link between expert and learner.

■ **Establishing Coding Standards.** The principle of coding standards in engineering is used to maintain consistency in reading and understanding complex code so any other software engineer can more readily modify the code if needed. In e-learning, coding standards become essential in establishing a standard navigation philosophy, functional multimedia and a standard cognitive learning model so learners easily can follow, understand and learn the content.

This is where the instructional designer assumes an important role in establishing the e-learning framework. The designer can define standards for the look and feel of an e-learning course and integrate it into the framework, enabling SMEs to develop their content with guidance from the standard.

For example, some authoring tools allow for alternative navigation options such as links to navigate to a glossary, the help page or other supplemental information. Experience in developing several e-learning courses with several tools consistently showed that users are confused by nonlinear navigation scenarios. This can be avoided by establishing a standard navigation that allows the learner to traverse forward or backward linearly, one screen at a time, while also allowing help, glossary or other information to be presented in a pop-up window.

Audio, video, graphics and animation can be extremely helpful in the learning process — but not necessarily all at the same time. Each additional element provides another focal point for the learner, so it needs to be kept within the relevant context. Establishing guidelines on usage can help eliminate distractions and keep all content relevant.

Consider the use of audio for guiding learners through the content. Retaining the attention of the learner with narration can be challenging when the learner cannot control it, pause it, read it or randomly access it. Providing some of these controls and an accompanying transcript can address the issue while enabling learners at different levels to streamline their learning experience. There is a caveat to this, however: Combining narration with transcript text can produce additional distracters that impede learning. One solution is to make them mutually exclusive by allowing only one or the other to be active.

It does take time to record narration audio and in some cases, it quickly can wear out with learners. Establishing a coding guideline by which audio is provided only when needed (such as to support a visual or animated representation of a concept) can reduce the development time and enhance learning effectiveness.

Coding guidelines also can address sustaining learner engagement. Defining some interactive assessment or quiz every three to five screens or ensuring every element used on the screen is relevant to the topic are just two examples.

■ **Testing Usability and Functionality.** Testing is a very important part of software development. The purposes of testing are to make sure the program meets all the requirements and to uncover any flaws or discrepancies in the use of the program. The reasons for testing e-learning are similar and equally important: to make sure the course meets objectives and functions properly.

Conducting testing on common functionality of the framework itself can eliminate unneeded testing for each individual e-learning course developed using the framework. It is still important to do some minimal testing on each course, not only to check that it works but also to validate the effectiveness of the training. This small investment can help maintain the quality of the training while developing it quickly.

There are two types of testing that are important to rapid e-learning.

1. Usability testing demonstrates the e-learning course structure is easy to navigate and delivers the content clearly. An e-learning course will impede learning if users are constantly confused by the objects on the screen or unable to hear or see multimedia clearly. Therefore, the purpose of usability testing is to ensure users will be able to learn from the framework on which the e-learning course was built. Testing the framework for usability can be accomplished best with an approach known as user acceptance testing (UAT), which involves a group representing the target audience of the e-learning and a questionnaire targeting specific usability issues, as well as open-ended comments.

The questionnaire can be organized into several key issues with a rating scale and space for additional comments. The sheet would be repeated for each screen and include some unique identifier such as a screen title or screen number. The questionnaire also can provide suggestions on the types of comments and feedback to provide to identify the key functions that should be addressed. An example of a questionnaire grid is shown in Table 1.

2. Functionality testing is used in software engineering for validating the program works as intended and meets all the requirements. In e-learning engineering, functionality testing would address not only that the learning course technically functions properly but also that the framework supports rather than hampers learning.

Functionality testing can be conducted with a checklist that accounts for as many functionality requirements as possible. It validates the functional features of the rapid e-learning tool and documents any nonfunctional features that need to be corrected.

TACTICS continued on page 56

Expect more from your training program...



Without
LearnKey
Training

With
LearnKey
Training



Is your current training program less than you expected? We challenge you to compare your current training program with LearnKey's training solution. One look and you will see the difference!

Check it out for yourself at
www.learnkey.com/clomag

1.800.865.0165 **LearnKey**

©2006 LearnKey, Inc. LKD407 Source Code #4134-732

LEARNING SOLUTIONS continued from page 27

on-demand learning and have extended the learning environment into a collaborative, community effort in which learners can ask questions, get answers and collaborate with peers and experts to truly enable the learning process. Those learners must be better-equipped than ever before to meet the demands from buyers for value articulation and business knowledge.

Companies that already provide strong sales methodologies and processes, including The TAS Group, Richardson, Wilson Learning, Sales Performance International (SPI), Performance Methods and Acclivus, are driving the use of sales performance measurement frameworks that deliver hard evidence of the business value of their training programs.

In addition, there are about three dozen U.S. universities that have courses of study in professional selling, turning out a little more than 4,100 graduates a year. Over the next 10 years, this number is likely to grow, with graduates of these programs funneling directly into the workforce as rookie — but highly educated and trained — salespeople. Because they are being schooled in process, as well as the basics, they will have an immediate and positive impact on the companies

Dave Stein is the CEO and founder ES Research Group. He can be reached at editor@clomedia.com.

TACTICS continued from page 41

It also allows SMEs to focus on conveying their knowledge rather than investing time trying to make the technology work properly. Some examples of functionality items that could be on a checklist are shown in Table 2.

Putting It All Together

The main purpose behind any process is to simplify tasks and make things more efficient, but the process also needs to be thorough to eliminate potential oversights. Applying these engineering principles to rapid e-learning is like a

Pat Alvarado is the learning and technology professional at E-Learning Engineering. He can be reached at editor@clomedia.com.

Table 2: Functionality Checklist Items

Function	Sub-Function	Comments
Audio	Transition audio functions as intended on first access and subsequent access Audio replay works for button-activated audio	
Buttons	Results from pressing buttons do not interfere with one another Buttons work multiple times	
Animation	Animation timing is appropriate for ease of understanding Animation replay works as intended	
Interaction	Instructions are clear Feedback is given to the student Interactions make students think and remember what they've learned	

for which they eventually will work.

The Bottom Line

There have been many great developments, yet sales is still last in line for many companies. All the education, training and technology in the world will not improve how people sell if they, their management and those who educate and train continue to look at sales training as a series of unconnected, tactical events, the results of which are not measured, rather than a critical support component in the broad adoption of a formal, institutionalized sales methodology.

For companies that have figured this out — and there are more every day — sales training is the means to an end. Total compliance with their company's methodology and underlying processes that result in measurably better performance is the end.

For these companies, sales training is not filling an available time slot at a sales meeting. Rather, it provides their salespeople with precisely what they need to know and do to sell products and services in an increasingly competitive and demanding market. These companies are leveraging their sales training and the underlying methodology and processes to their fullest, providing them with superior competitive advantage. ■

marriage between instructional design and software development.

Clearly defining requirements keeps the focus on the learning objectives and maintains the quality of the e-learning course. Defining coding guidelines helps maintain the tone of the e-learning deliverable and guides the SME in developing the most effective e-learning course while maintaining speed.

It also can prevent implementing too many bells and whistles that distract from learning. Testing ensures a quality e-learning course is delivered to learners.

Integrating these principles into existing learning development processes will vary from organization to organization, so it is important to look at each principle and where it best fits in the process. It will be important that there is complete agreement on the value of applying these principles in developing rapid e-learning, as well as how to integrate them into processes.

Rapid e-learning provides opportunities for keeping up with the speed of business while meeting the challenge of balancing fast development with quality learning outcomes. Applying the engineering principles of clearly defined requirements, coding guidelines and testing can assist in achieving that balance. ■