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From the Ground Up: An E-Learning Designer's Experience with the Development, Deployment, and Assesment of E-Learning

Vincent F. Kwisnek
Duquesne University
224 Universal Road, Apartment A-1
Pittsburgh, Pennsylvania 15235-3758
412-247-5163
vkwisnek@ppg.com

EXECUTIVE SUMMARY

I worked for one year as an independently contracted E-learning Designer with a Fortune 500 Company located in Pennsylvania. I utilized my expertise to develop safety and health e-learning modules that could be utilized on the various computers and operating systems within the company and could be modified to meet the specific needs of each of the company's locations. Since the company had no formal method for assessing the effectiveness of e-learning modules, I developed and implemented a research study that would pilot the concept of evaluating the educational effectiveness of e-learning modules. The research study was comprised of a Pre-Module and a Post-Module Survey that could be used as "bookends" to an e-learning module. The Pre-Module Survey, Driving Readiness Module, and Post-Module Survey were joined by a series of linear links and placed on the company's intranet. At the heart of the Pre-Module and Post-Module Surveys existed the questions that formed a Know, Want to Know, Learn Chart. The research study is currently a work in progress, but I have already learned valuable lessons about lesson design and research study development.

THE COMPANY'S FIRST ATTEMPTS TO DEPLOY E-LEARNING

The Instructional Technology Graduate Program at Duquesne University provided me the experience I needed to realize that I wanted to move from public education to the corporate realm; therefore, I resigned my teaching position and sought to make my way in the corporate world. From the fall of 2001 to the fall of 2002 I was an independently contracted E-learning Designer with a company located in Western Pennsylvania. To place my role as an E-learning Designer into the proper context, I have provided below a summary of the company's efforts to purchase and develop e-learning.

To remain in accordance with OSHA's and its own high standards, the company's policy is to operate the safest possible workplace environment. To best meet the requirements stated in this policy, the company has utilized face-to-face instructor-led training to convey safety and health practices and requirements. During the late 1990s, the company began searching for a way to reduce the cost of training and the expense incurred due to lost productivity. Such safety and health training would also need to provide flexibility so that employees could begin, continue, or complete training at their convenience. E-learning was seen as the solution, so the company began purchasing and developing safety and health modules.

After years of unchecked e-learning purchasing/development and deployment, the company informally examined the perceptions of e-learning among its employees. Most employees generally saw e-learning as ineffective, unavailable, unsupported, cost-prohibitive, and too high-tech for the hardware that was available at the company's locations. In reaction to these negative perceptions, the company formed an Action Team that was comprised of employees who supported the utilization of e-learning. The Action Team spent three months examining the possibilities of improving the purchase/development and deployment of e-learning. By March of 2001, the Team concluded that the best solution would be to purchase and deploy commercially available training provided by outside vendors.

Because of this conclusion, the company spent the spring of 2001 evaluating various types of commercial training products, including: web-based training (WBT), CD-ROM, video, and pay-per-view. After two months of evaluating a variety of products, the following discoveries and conclusions were reached. First, content providers typically lease training through a per-user or yearly fee, and these fees proved cost prohibitive for the company. Second, content providers tend to distribute basic, generic content so that they may maximize their profits by offering the content to a variety of businesses, and such content had little or no specific connection to the company's employees. Third, each vendor that was evaluated utilized proprietary technology, and the company saw the use of proprietary technology as limiting in regard to the ways that training could be developed and deployed.

Due to the conflicting findings of the Action Team and the commercial training product evaluations, the company contacted a distance education professor at a university located in Pittsburgh, Pennsylvania. After numerous meetings, the professor advised that the internal development of e-learning, though challenging, over time would be the most economical and effective method to deploy safety and health e-learning within the company. This recommendation was made because internally developed content could be modified and improved for little expense to best meet the needs of the learners. Based on this recommendation, the company spent the summer of 2001 developing and demonstrating internally created e-learning modules created with various e-learning development software.

These demonstrations validated the need for further internal development of e-learning, so the company sought an Independent Contractor who had a background in education and experience with technology. Their search yielded me, a former fourth grade teacher who wanted to utilize my experience as an educator and my new skills in the area of Instructional Technology to assist businesses with the development of e-learning. As the fall of 2001 began, I began laying the foundation of an e-learning development process.

AN E-LEARNING DEVELOPMENT PROCESS

As winter approached, I set out to develop learner-centered e-learning that would seamlessly integrate with the existing and upcoming technology platforms so that all employees could utilize the developed e-learning within their locations.

To develop e-learning that met the training needs of the employees, I collaborated with the locations that requested the development or modification of an e-learning module. Content creation began when a supervisor identified a training need and requested the development of e-learning to meet this

need. Throughout the development process, the supervisor and content experts were allowed to view the status of development. Before any e-learning module was deployed for employee use, the module was informally piloted. Feedback from the pilot was used to further improve the e-learning module. An e-learning module was deployed for employee use only when it proved to contain properly communicated content and was grammatically and navigationally correct. Each development effort resulted in an e-learning module that was designed to meet the specifications of the requesting location and meet the needs of the learners.

E-learning proved useless if the company's locations could not utilize the modules in accordance with the existing technology; therefore, each e-learning module needed to integrate with the various technologies utilized throughout the company. Knowing that the only feasible e-learning development and deployment solution would be the one that worked on the oldest computing hardware and software in use, I created two versions of the first e-learning module I developed. One version was authored with e-learning development software, and the other was created with HTML and JavaScript.

The version of the module authored in the e-learning development software failed to function on many of the company's computers, but the version that was created in HTML and JavaScript worked on all computers; therefore, the use of this HTML and JavaScript format was approved. Over time, informal pilots of the first e-learning module provided feedback about the module's interface, and I utilized this feedback to create a set of module template pages. I also enhanced subsequent e-learning modules with features such as an automated slide show that could demonstrate various health and safety processes.

THE RESEARCH STUDY

As I finished the development of the first e-learning modules I realized that the company had no formal method of assessing the effectiveness of these e-learning modules. In an effort to correct this, I developed a research study that would pilot my first attempt at creating a standardized method of assessing the e-learning that I developed. I decided that the research study would focus on the effectiveness of the *Driving Readiness Module*.

I drafted my research project with two objectives: analyze the educational effectiveness of the Driving Readiness Module, and prove the concept of evaluating the educational effectiveness of e-learning modules. To meet these objectives, I created a Pre-Module and a Post-Module Survey that can be used as "bookends" to the *Driving Readiness Module* or any other e-learning module. Embedded into these surveys are three questions that will form a Know, Want to Know, Learned (KWL) Chart. The three questions that comprise the KWL Chart ask:

1. What do you already know about "Driving Readiness?"
2. What do you want to learn about "Driving Readiness?"
3. What did you learn about "Driving Readiness" by completing the *Driving Readiness Module*?

The Post-Module Survey also contains two questions that can be used to compare the learner's wants garnered from the Pre-Module Survey against what expected learning was and was not covered in the e-learning module. The two questions are:

1. What things that you expected to learn were covered by the *Driving Readiness Module*?
2. What things that you expected to learn were not covered by the *Driving Readiness Module*?

Once the surveys were created and the Institutional Review Board approved the research study, I randomly selected 10 potential participants from a pool of approximately 30,000 employees. The 10 potential participants will receive an invitation email. For those potential participants that decline participation, I will randomly select additional potential participants and send each one the invitation email. This process will conclude when 10 potential participants agree to participate in this study. In conjunction with this process, I began researching the history of Distance Education and the previous efforts to evaluate the effectiveness of e-learning and traditional learning.

The Pre-Module Survey, *Driving Readiness Module*, and Post-Module Survey were joined through a series of linear links and placed on the company's intranet. Upon the consent to participate, I will send each participant a welcome email that provides a link to the Pre-Module Survey. Once the Pre-Module Survey, *Driving Readiness Module*, and Post-Module Survey are completed, the participant will automatically be linked to a thank you page from which s/he can close the web browser to complete his/her participation in the research study.

To participate in this research study, each participant must have access to a multimedia computer that has an operating system no older than Windows 95, which has access to the company's intranet. Each participant must also have an email account provided by the company so that s/he can receive the invitation to participate, the consent to participate letter, and the welcome letter. A printer, video card, sound card, and set of speakers or headphones are optional hardware that will enhance the training experience.

CURRENT CONCLUSIONS

As of this writing, I have received five signed Consent to Participate forms, and I am continuing to research of the history of Distance Education and the previous efforts to evaluate the effectiveness of e-learning and traditional learning. By the end of January, I hope to receive five additional signed Consent to Participate forms and all ten Pre-Module and Post-Module Surveys. Along with gathering all forms and surveys, I will complete my research of Distance Education's history and previous evaluations of e-learning and traditional learning. By the beginning of March, I will conclude the data analysis of the Pre-Module and Post-Module Survey and produce a brief report of my research study.

Though the research study is still underway, I have already gained valuable knowledge and experience. Looking back upon my experiences, I now see that there are things that I could have done differently and better. Before creating another research study, I will first conduct a literature review, for such a review will have a positive influence on the creation of the research study. Also, the next research study that I create will be drafted so that it meets Institutional Review Board (IRB) approval the first rather than the third time I submit the research study's documents. In conclusion, I am excited by the prospect of concluding this research study and assimilating the collected data.