Technology Best Practices: Executive Summary

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As the healthcare industry becomes more dependent on and implements more technology into its everyday practices, there is a greater need to educate the workforce about information security. The Information Services Security division at Vidant Health in Greenville, NC, the key stakeholder for this project, has requested eLearning about information security awareness. Vidant Health is envisioning several short, interactive modules with audio voice over covering technology best practices. These modules cover topics on how to create strong passwords, proper use of social media, how to handle spam and phishing scams, and how to avoid viruses at home and at work. These modules will seek to empower the workforce to better protect all forms of sensitive, confidential information by increasing employee awareness of basic technology best practices.

Front-End Analysis

Project Learners and Needs

There are almost 13,000 employees with different backgrounds, experience and education at Vidant Health. There is a sense that most are not tech savvy. The purpose of this project is to educate all employees on how to properly use technology and social media and to increase employee awareness of basic technology best practices.

Instructional Goals and Performance Objectives

Goal 1: Vidant Health employees will create strong passwords and properly manage and change their passwords.

Objective 1: After completing the Passwords online module, Vidant Health employees will successfully create strong passwords and demonstrate 100% mastery on the quiz.

Objective 2: After completing the Passwords online module, Vidant Health employees will successfully demonstrate best practices when managing their passwords and demonstrate 100% mastery on the quiz.

Objective 3: After completing the Passwords online module, Vidant Health employees will successfully demonstrate best practices when changing their passwords and demonstrate 100% mastery on the quiz.

Goal 2: Vidant Health employees will properly use social media.

Objective 1: After completing the Social Media online module, Vidant Health employees will successfully define social media, describe the possible risks involved in using social media and demonstrate 100% mastery on the quiz.

Objective 2: After completing the Social Media online module, Vidant Health employees will successfully identify the types of social media and demonstrate 100% mastery on the quiz.

Objective 3: After completing the Social Media online module, Vidant Health employees will successfully demonstrate best practices when using social media and demonstrate 100% mastery on the quiz.

Goal 3: Vidant Health employees will recognize and properly process spam.

Objective 1: After completing the Spam online module, Vidant Health employees will successfully identify spam emails and demonstrate 100% mastery on the quiz.

Objective 2: After completing the Spam online module, Vidant Health employees will successfully demonstrate best practices in addressing spam emails and demonstrate 100% mastery on the quiz.

Goal 4: Vidant Health employees will recognize and avoid phishing scams.

Objective 1: After completing the Phishing Scams online module, Vidant Health employees will successfully identify phishing scams and demonstrate 100% mastery on the quiz.

Objective 2: After completing the Phishing Scams online module, Vidant Health employees will successfully demonstrate best practices in avoiding phishing scams and demonstrate 100% mastery on the quiz.

Goal 5: Vidant Health employees will avoid viruses and Trojans at home and at work.

Objective 1: After completing the Viruses and Trojans online module, Vidant Health employees will successfully demonstrate best practices in avoiding computer viruses and Trojans and demonstrate 100% mastery on the quiz.

Objective 2: After completing the Viruses and Trojans online module, Vidant Health employees will successfully demonstrate best practices in browsing the Internet and demonstrate 100% mastery on the quiz.

Project Context and Media

Our project deliverables are Adobe Captivate source files. These files include various images related to the individual slide content. Voice over narration is included in all content slides. Our client, Vidant Health, will publish the actual Captivate tutorials. These tutorials will then be placed on the Vidant Health learning management system for employees to view. At first, completion of the learning modules will not be required. However, there is ongoing discussion about presenting these at new employee orientations, lunch-and-learns and other events of the like.

Project Description

The project is composed of five instructional modules developed in Adobe Captivate:

1. Passwords
2. Social media
3. Spam
4. Phishing
5. Viruses and Trojans

Each module includes scenarios where best practices come into question for the learner. The modules are designed with the novice computer user in mind. Each module consists of instruction on a particular facet of technology best practices, practice questions and a quiz with feedback and interactivity. Learners must demonstrate a 100% mastery on the quiz component, or they will be required to retake the module. We motivate the learners by applying methodologies adapted from Keller's ARCS model. For example, each practice question directly follows the content it covers. This maintains the the learners' attention. Additionally, since the instructional information was just reviewed, the learners can feel more confident in their ability to recall and apply that information.

We wanted our learners to relate personally to our instruction; so, we paid attention to multicultural needs. For example, we wanted to design broadly with an awareness of both gender and ethnicity. Scenarios are presented for concept, principle, procedure, and higher-order thinking skills. Concept-checking questions are included in order to check memorization of best practices, even though we intend to relay concepts rather than to just list sequences of information.

Content

Our intention was to create instructional modules that provided training in technology best practices. Each module consists of a scenario, an instructional segment, practice questions throughout, examples and a quiz. The scenario segment presents a worst-case scenario where something has gone wrong because a user did something inappropriate. We then ask the rhetorical question, "What went wrong?"

Next, we present the instructional content. Each instructional segment consists of a specific area of technology best practices, such as creating strong passwords, appropriate use of social media, etc. We coordinated our writing styles so that the learning modules do not clash with each other. We wanted to personalize the instruction and make it relatable to our learners by using examples and scenarios relevant to the target learners.

At the end of each module is a quiz that learners must demonstrate 100% mastery in order to pass the course. The quizzes and scenarios are presented in relation to the intended learning tasks. In addition, the quizzes mirror the scenario the learner was first presented with to help bring the instruction full circle. The learner then selects the best practice required to avoid the disaster presented in the introductory scenario. Detailed instructive feedback is provided for correct and incorrect answer selections.

Project Elements

We developed a point-and-click interface that consists of an animated splash slide which immediately moves to the welcome slide where the instructional topic is introduced. We keep walls of text to a minimum. The images used on the instructional content slides are interesting and relate to the text described. Our modules employ both audio narration and text in order to

open two simultaneous learning channels. We use images that are representative of the personalities described in our learning scenarios.

The sequence of the presentation is: introduction, disaster scenario, best practices, best practices examples, concept-checking questions throughout the instructional content, and a quiz component. If the quiz is completed unsuccessfully (<100%) after one attempt, the learner is required to retake the module. The quiz relates directly to the initial disaster scenario. We are dedicated to the idea that the information presented should be precise, concise and interesting all at the same time.

The main tasks for our learners are concept, principle, procedure and higher-order thinking. Both aspects of higher-order thinking, conceptual and causal, are also utilized. The conceptual aspect falls under the overall umbrella of technology best practices. The principle aspect covers cause-and-effect such as, "Doing this will result in this situation, and doing that will result in that situation." Once the learners have the concept of general best practices, the causal relationships present themselves. The focus is on criteria-based responses that produce the desired results. Procedure tasks make up the major portion of the instruction. The learners are instructed to follow specific procedures if they encounter a scenario in which best practices instruction applies. Memorization tasks are minimal.

Instructional Strategies

For learner motivation, we adapted from the four aspects of Keller's ARCS model. The *Attention* aspect of the model is addressed by presenting a situation in which a disaster occurred because a computer user did not utilize technology best practices in his/her decision making process. The possibility of being the creator of a disaster is more than enough stimulus

to get a learner's attention, as long as what they were being presented with is relevant to their life and their situation.

Vidant Health employs over 13,000 people, and the implication of that is that Vidant Health has an extremely multicultural work environment. Because almost all communication is digital, we made the assumption that practically everyone taking this training is a computer user in one way or another. The learner analysis revealed that two-thirds of the target audience who completed the learner survey felt that they would benefit from training on technology best practices. Therefore, the *Relevance* aspect of the ARCS model constructs our learning modules in a way that addresses users of technology in a multicultural work environment. For example, we wanted to present our scenarios comprised of example figures who reflect multicultural backgrounds.

By using the appropriate photos or clip-art, we address both gender and ethnicity, especially by utilizing a naming convention that reflects ethnicity such as Keisha, Luis, Adrian or Sofia, while at the same time avoiding stereotypes. Using these two strategies conferred a sense of relevance to the learners. The examples and scenarios are also relevant to the learners because we obtained actual examples from Vidant Health relating to the topics and what their employees have experienced.

There are two areas in which *Confidence* is an important factor. One area is being able to operate the learning module itself; so the idea behind the composition of the modules is along the lines of the KISS principle – Keep It Sweet and Simple. That way, there is very little cognitive load presented in addition to the instruction itself. The other area in which *Confidence* is a factor is in the instruction itself. For example, if a learner, being presented

with a scenario, chooses a course of action that does not reflect technology best practices, the learner is not penalized, marked off or chastised in any way. S/he is simply presented with detailed instructive feedback and asked to retake the module for the opportunity to select more appropriately. There is no embarrassment, and confidence in the instruction and the learners themselves is assured. The idea is to validate both the learning and the learner.

As far as *Satisfaction* is concerned, the appropriate methodology is to break the instruction down into its simplest components and to remove the apparent mystique that some learners may seem to think exists around the efficient use of technology. The learners understand that they are in no way responsible for anything before they begin the learning activities. Instruction is presented in small, easily digestible steps. The learners also understand that they are not being singled-out but rather are participating in their own career development. Once this idea is established, the learners walk away from the instruction with a strong sense of personal and professional satisfaction.

Our routine strategies are presentation, instruction, practice and feedback. We present an initial disaster scenario, introduce instruction on how to avoid this disaster, present practice and quiz questions to practice what they have learned, and provide detailed instructional feedback based upon their answer selection. In the quiz, the learner has the opportunity to identify the best practice that could have avoided the initial disaster scenario.

Our main enrichment strategy is the *Inductive-generality tactic* combined with the *Example/Non-example tactic.* We present a non-example (the initial disaster scenario), then present the generality (best practices). Then we present an example and then assess transfer or

assimilation of the generality through the practice questions and quiz. If the assessment suggests that learning did not take place, the generality is presented again through instructive feedback.

Formative Evaluation

Our client, Vidant Health, selected five target learners to participate in a focus group session for the formative evaluation. This evaluation took place on Monday, April 11, 2016 at 1:00 in the afternoon and lasted approximately an hour and a half. During the evaluation, learners with a technical range from not very technically savvy to very technically savvy completed each of the five modules. They were asked to record the results of their practice questions and final quizzes in each module as well as to record any comments they had based on the content they observed. During the time the learners were completing these modules, one of our client's representatives was in the room with the learners in case they needed assistance with anything. No assistance was needed.

The modules averaged about six minutes in length. The expected time of completion was 30 to 35 minutes. It took our learners around 50 minutes for all five of them to complete the modules. Extra time was taken due to the fact that they were asked to record their practice questions and quiz results as well as record any other comments they may have had related to the modules. After about 40 minutes, we did a brief check-in with the learners to see how the learners were coming along in completing the modules.

After all of the learners completed the modules, a focus group session took place. During this session, questions were asked about the content, the behavior of the modules, the results of the practice questions and quiz questions and general comments about the overall modules including any recommendations the learners had for improvement. All of the learners were very

pleased with the modules and excited to share them with their co-workers. Improvement suggestions were made on some of the content, how the practice and quiz questions were set up, timing issues that the learners experienced with the slides and additional content to be added to one of the modules. We have since implemented most of these suggestions for improvement.

Our client listened in on the focus group session and was very pleased with the results and the overall experience of the session. Constructive criticism was received from the learners and, as mentioned before, implemented in another revision of the modules. After the focus group session was complete, our team received an email from the subject matter experts at Vidant Health with additional recommendations that have also been implemented in the latest round of revisions. We welcomed the constructive criticism as well as the compliments on the instruction in general. We also incorporated suggestions from EDTC 6040 classmates and from Dr. Sugar in our revisions. We all feel that this was a very successful formative evaluation that will help to deliver an extraordinary product to Vidant Health.

Recommendations for Future Revisions

A future revision that we recommend is to incorporate more interactivity and engagement into the modules; for example, fading in the text on the content slides as they are described by the audio narration. Another option is to incorporate interactive buttons on the screen that learners can click to access a new screen of information. Based upon the formative evaluation results, we feel that our final project is strong and should enable learners to successfully achieve the instructional goals and objectives.