

A MULTIMEDIA MODULE ON
MISDIRECTED ATTENTION WHILE ADMINISTERING MEDICATIONS

by

Rachel M. McPhail
A project summary submitted
in partial fulfillment of the
requirements for the
degree

of

MASTER OF SCIENCE

in

Instructional Technology and Learning Sciences

Approved:

Major Professor
Sheri Haderlie

Head, Department of
Instructional Technology

UTAH STATE UNIVERSITY
Logan, Utah
2013

Introduction

The medication safety team at Primary Children's Medical Center (PCMC) identified a safety problem created by nurses and pharmacists. These healthcare professional made mistakes in administering medications due to misdirected attention. The medication safety team evaluated and considered different interventions to implement to begin addressing the issue. Due to time and budget constraints, the team decided to sponsor a multimedia module to promote awareness and give healthcare professionals strategies for coping with misdirected attention. The completed project can be reviewed here:

<http://mediahost.ihc.com/ihcu/public/cme/misdirectedAttention/frameset.html>.

The project was assigned to me, Rachel McPhail, to design and develop. Prior to being assigned to me, the project was vetted by a committee as being appropriate for a multimedia module, and learning objectives were identified. At PCMC, instructional designers are responsible from the beginning of the project, which usually starts with an content outline, to the end of the project, which is coordinating implementation on the learning management system (LMS).

Professionally, I have over eight years of experience creating multimedia modules. For the last three years, I have been employed by PCMC. Designing modules for just one company has been a unique experience in my career. I've had the opportunity to learn more about the audience and find better ways to reach them.

The misdirected attention module is unique in that it is not a concrete clinical topic. This gave me more latitude as a designer in organization and presentation. Early on, I decided to use

graphics and videos to convey the message. The graphics and videos would build on concepts and experiences that the general population would be able to identify and relate to.

Description of Project

The project was divided into four phases: content outline, storyboard, media development, and implementation.

Content Outline

When the project kicked off, the medication safety team handed over their content in a PowerPoint file. Compared to other projects that I've worked on, the information was well organized. I broke out the information into an outline. In my outlines, I concentrate on breaking the content into pages that directly translate into multimedia pages. There are three types of pages that I use: presentation, which is just information no interactivity; click and reveal, which is an interactive page that requires the learner to click object to access additional information; and practice, which is a review of previously presented content. Identifying the page type at this early stage helped the team see my vision for this project.

As this stage I realized that some of content was a bit wordy for a multimedia module. I made note that the text would be modified/condensed in the storyboard phase.

The outline was presented to the team at the beginning of November. The team reviewed the outline within a week, only requesting minor changes. The final outline, Review 1, was approved by November 9, 2012.

Storyboard

The storyboard phase was divided into three review cycles, called Review 2, Review 3, and Review 4. Based on experience, I like to use a Word document for storyboard reviews. In the past, I've tried PowerPoint and scripting directly into Adobe Flash. Word is generally easiest as it allows for tracking changes and doesn't distract reviews with fun interactive elements.

Figure 1 is a sample of how I present information in a storyboard.

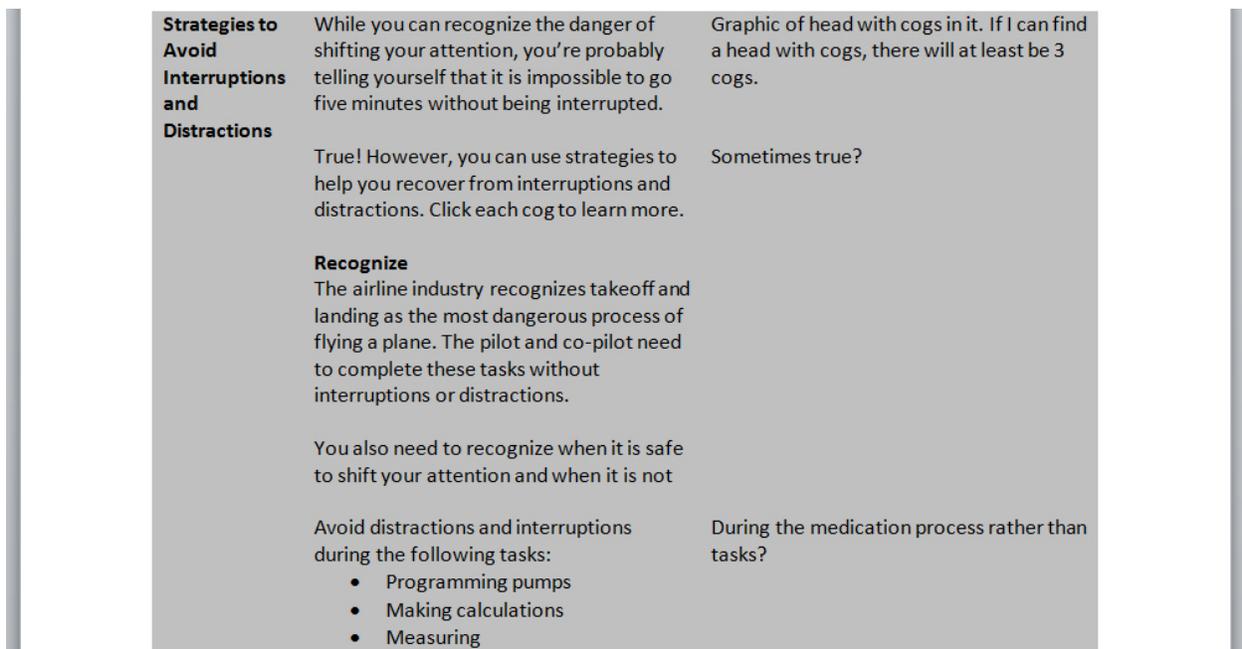


Figure 1: Storyboard sample

Due to the organization of the PowerPoint file, creating the storyboard was easy. I made text changes to accommodate the multimedia format, added an introduction and conclusion page, and modified the text to a conversational tone. The storyboard was submitted to the medication safety team for Review 2.

Within a week, I had feedback from the medication safety team. We met to discuss the changes. At this point the biggest concern was the list of distractions and interruptions on page four. The study by Hall et al. (2010) didn't identify mobile devices specifically as a source of

distraction. However, a quick glance at work behavior at PCMC identified mobile devices as a source of distraction. Additionally, some units do not allow nurses to have mobile devices with them while on the floor. Some team members felt like mobile devices shouldn't even be mentioned.

In the end, Jared Cash, a pharmacist, did a literature search on the consequences of using mobile devices. The evidence states that mobile devices distract healthcare professional from doing their jobs and a strategy should be in place for managing them (Gill, Kamath, & Gill, 2012). Page five was added to specifically identify mobile devices. A strategy to cope with specifically with mobile devices is not included due to the varying policies across units.

Additional minor text changes were identified. I completed the changes and prepared the storyboard for Review 3 on November 20. Review 3 is a new step in the multimedia development process. The storyboard is sent to a larger team that may or may not have an interest in the content. At PCMC, the storyboard was sent to unit education coordinator, nurses from each unit who are responsible for education on their unit. The medication safety team sent the storyboard to the Intermountain Healthcare corporate medication safety team.

Feedback from Review 3 was nominal and positive. None of the changes required a change in content. I'd classify the changes as minor text modifications. All reviewers expressed excitement for viewing the final product. In other projects, I've received significantly more feedback in this phase. I believe the subject matter influenced the low volume of feedback. If the topic would have been clinical in nature, such as the process for labeling mother's milk, I know we would have received more comments, because the specific wording is important to so many

people. Whereas, on the topic of misdirected attention while administering medication is recognized as important, but not tied to a specific care process model.

Again changes were compiled. Review 4 was sent to the PCMC medication safety team on December 3. Final approval was sent to me by December 14. The storyboard was set to be complete prior to Christmas vacation. Project was on schedule up to this point.

Media Development

The development phase began in January after the holidays. I divide the development process into categories, including: template/look-and-feel selection, programming activities, video production, and graphic design and development. The project was developed in Adobe Flash CS6.0. I used templates created by the Intermountain Healthcare. The templates provide a shell for the content, navigation, and the requisite code for communicating with the LMS. In the template library, there are several designs to choose from that conform to Intermountain Healthcare's style guide. Figure 2 is a sample of the template that I selected. Most of the templates have a white background, making it easier to place photos without a transparent background. I decided I wanted the textured background for variation. This decision meant I would need to spend more time preparing photos and other graphics.

By January 23, the interactive activities were created and ready for the medication safety team to review. This wasn't a complete review, just a check in. I didn't have all the graphics developed, nor all the activities built.. In most places I used square and circles as placeholders. Before I invested time in graphic creation, I wanted to verify that the team like where I was going. The team reviewed the activities and suggested making page five interactive. Previously it was a presentation page with bullet points. The interactivity on page six was awkward. It we

could use audio driven animation, I would design it to play out. In this review, I had a next button placed above the head. It looked awkward. In the end, I designed the forward button to appear with each transition. The team approved this change.



The slide features a dark blue header with the word "INTRODUCTION" in white. The main content area has a light beige background with three paragraphs of text on the left and a large, dark, burnt slice of toast on the right. At the bottom left is the Intermountain University logo, at the bottom center is the text "Misdirected Attention Affects Medication Safety", and at the bottom right are navigation arrows and the text "3 of 18".

INTRODUCTION

In the course of one day, how often is your attention misdirected? Probably more often than you think.

What type of consequences do you suffer for misdirecting your attention? Hopefully nothing worse than back tracking to a different train station or finding something else to eat. You may even have a good story to tell if you aren't too embarrassed to admit your mistake.

However, at work, misdirecting attention while caring for a patient or giving medications can have severe consequences depending on the task at hand.

Intermountain University

Misdirected Attention Affects Medication Safety

3 of 18

Figure 2: Template sample

With the interactivity approved, the team switched gears to video production. In the January 23rd meeting, the shooting schedule was determined and talent was identified. All actors in the videos are Intermountain Healthcare employees. Due to the video producer's schedule, we didn't complete shooting until February 19. This created a tight timeline for producing a finished module. Given the video production deadline, the review date for Review 4 was set for March 6.

In February, I completed the graphic design tasks. I wanted to create a visual element that learners could easily identify with. Gears in a head are not an original idea. However, it is a concept that learners could relate to and build upon. From that point, I decided how to use the element. My big fear was over using the element. During a review, the graphic design elements were well received.

The videos were not ready by March 6th. At this point, I knew we didn't have time to complete all the reviews in the development phase and meet the March 22 deadline. After speaking with the video producer and the medication safety team, I altered the review schedule. The medication safety team reviewed the module minus the videos as partial Review 4. The full Review 4 and 5 were combined. On March 12, I received the video files. Due to audio constraints, I needed to make close captioning files for four of the videos. By March 15, I had a complete module ready for review.

The module was reviewed by the medication safety team and corporate teams the week of March 18. I was a bit anxious about getting feedback at this late point. I didn't have time to make significant changes and mediate large difference in opinion. However, my fears were unnecessary. I received nominal feedback, most of which was related to minor text changes and locking down the navigation. Completing thorough reviews for the storyboard phase paid off with nominal changes in the development cycle.

Implementation

With an approved project, I followed the procedure for adding the module to the Intermountain Healthcare LMS catalog. I also included a post-survey. This survey was created

with a program called Questionmark. The results from this survey will be compared with pre-intervention survey that was completed during the first quarter, January-March.

Conclusions

Looking back at this project, I recognize several successful moments that I'm pleased with. While I've made several projects for the nursing staff at PCMC, misdirected attention was my first project directed towards pharmacists. Normally, this population is considered too small to get their own individual multimedia modules. The pharmacists who are on the medication safety team put forth a lot of effort to be collaborative with the nurses. Their attitude created a positive work environment. From the prospective of working with both groups, I appreciated the effort. It made my job easier when decisions needed to be made. At the end of the day, the pharmacists were easy to work with. I hope to do more with them in the future.

The pharmacists created a very realistic scene for their video scenarios. I attribute this to their leader, Jared Cash. Jared wasn't afraid to show it how it really is. Oh course, he may be sending a message to Administration that their work environment is inherently chaotic. I learned that it is OK to shoot really realistic scenes. The preliminary feedback from the pharmacy videos has been positive as it resonates with employees.

I pushed my graphic design skills by developing an object, the gears in the head, which became part of the message. The gears were purchased from iStockphoto. Since it was a vector image, I was able to color them using colors from the corporate style guide. The gears worked well with template, adding a touch of professionalism.

My default strategy for making a multimedia module is present the data, include a few practice activities, and end with a real-life scenario that is three to five questions long. In this

module, I stepped away from my default strategy. I wanted the learners to reflect on their own distractions and interruptions. Incorporating activities that happen outside or work presents the concept in a different light. My hope was that it would help nurses and pharmacist identify their most common distractions and interruptions.

Even though the videos took forever to produce and caused me a bit of anxiety, I'm pleased with the final result. Modules with videos always have a higher engagement factor with learners. I'm always happy when I get to include them in my projects.

Recommendations

While the project fulfilled the objectives setup by the medication safety team, there are a few things that I would do differently to improve the module. First, I would find a better way to package the strategy section into an acronym, a mnemonic, or a symbol to help nurses and pharmacists remember what they should do to stop misdirected attention. Currently, the action verbs recognize, minimize, and recover are all applicable, but not easy to put into working memory. I tried to work this into the plan during the storyboard phase. Yet, I didn't gain enough buy in to make the change. This is partly due to the fact that I didn't have an idea in my head. I only knew that I needed an idea. There has been some discussion about making this module an annual education requirement. If that happens, I'll bring up the need for this change in the future.

With a proper acronym, I would replace the stacked gears used on pages 12 and 13. Additionally, the acronym could be used in screen savers, newsletters, bulletin boards, etc. to continue teaching the concept. I used the stacked gears, because I couldn't come up with a better symbol for the strategies. However, by this point, I felt like I was over using the gears symbol and they didn't actually promote the strategies.

The second item I want to fix, but probably won't ever fix is the video clips with the nurses. The content and delivery are perfect. However, the scene is nothing close to real life. The pod is quiet. Nobody is crying. Normally, a pod is noisy as doctors, families, and other employees care for patients. The environmental chaos is all part of being distracted, particularly in a pediatric setting. In preliminary testing, several people noted how the pharmacy scenes felt real. Users could relate to the chaos and the distractions. Nobody made similar comments regarding the nurse scenes.

The final item that annoys me is the locked down navigation. I never suggest the feature. Yet the team always asks for it. I don't believe requiring learners to click every button means they will learn the content. It just means they know how to click every button. If teams are really interested in making sure learners learn, they can test them, ask for a commitment to change, or follow up with an evaluation in performance. Better yet, they can do all three of those items. Additionally, locking down the navigation means it is less likely that a learner will come back to their learning history to review the content. At least, I know I wouldn't if I knew I would have to click a ton of buttons just to get to the information I was looking for. One of my unofficial goals for 2013 is to convince a team to not lock down the navigation, but to find an alternate method for measuring learning.

References

- Gill, P.S., Kamath, A., Gill, T.S. (2012). Distraction: an assessment of smartphone usage in health care work settings. *Risk Management Healthcare Policy*, ;5:105-14. doi: 10.2147/RMHP.S34813.
- Hall, L.M., Pedersen, C. Hubley, P. Ptack, E. Hemingway, A. Watson, C. & Keatings, M. (2010). Interruptions and pediatric patient safety. *Journal of Pediatric Nursing* June 25(3):167-75.
- Bennett, J., Dawoud, D., & Maben, J. (2010). Effects of interruptions to nurses during medication administration. *Nursing Management – UK*, 16(9), 22-23.
- Biron, A.D., Loiselle, C.G., & Lavoie-Tremblay, M. (2009). Work interruptions and their contribution to medication: an evidence review. *Worldviews on Evidence-Based Nursing*, 6(2):70-86.
- Holden R.J., Patel, N.R., Scanlon, M.C., Shalaby, T.M., Arnold, J.M., and Karsh, B. (2010). Effects of mental demand during dispensing on perceived medication safety and employee well-being: A study of workload in pediatric hospital pharmacies. *Research in Social and Administrative Pharmacy*, 6(4):293-306. doi:10.1016/j.sapharm.2009.10.001
- Westbrook, J.I., Woods, A., Rob, M.I., Dunsmuir, W.M., Day, R.O., (2010). Association of interruptions with an increased risk and severity of medication administration errors. *Archives of Internal Medicine*, 170(8):683-690. doi:10.1001/archinternmed.2010.65.