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Eye Protection & Hearing Conservation eLearning Final Report

Background and Purpose

For the past eleven months, I was given the opportunity of working at Georgia Transmission Corporation (GTC) as an Instructional Designer/Communicator. I was located at the Electric Cooperative Training Center in Smarr, Georgia. I worked with the Safety & Technical Training (STT) Department to support Georgia Transmission Corporation's safety education and technical training programs. In this position, I evaluated existing training delivery media and recommended appropriate methods to leverage new technology. In addition, I worked with subject matter experts to develop graphics, job aids, and an instructional video to support GTC's technical knowledge transfer initiative.

Georgia Transmission Corporation (GTC) is a not-for-profit electric cooperative that provides electric transmission services to power producers and distribution utilities. The company primarily transports power for 38 out of the 42 distribution cooperatives in Georgia, and their electricity supplier, Oglethorpe Power. Georgia Transmission builds and maintains about 3,000 miles of transmission lines and more than 640 substations.

Problem and Needs Assessment

My supervisor tasked me with converting all in-person training courses into online ones. So far, we have converted three courses. The Director of the Safety and Technical Training Department wanted to give our widespread consumers an option of taking their classes online instead of physically coming to the training center in Smarr, Georgia. The problem currently is the Eye Protection & Hearing Conservation course is in person and takes around 20 to 25 minutes to present. Consumers should not have to travel to the training center just to take a 20-minute course. Consumers should have the choice of an online option, especially during a pandemic. The Eye Protection & Hearing Conservation eLearning course fills a gap in knowledge and skills.

Analyses

The following section is the *Learner, Context, and Content Analysis*. When creating an instructional design project, it is crucial to understand the target learners so that instructional designers can design content best suited to the audience. In addition, it is essential to understand the context in which the instruction will take place and the context in which the learners will eventually use their new skills. Also, I will describe the different kinds of content structures I encountered in my work.

Learner

The target learners are GTC electrical technicians and other professionals that may be out in the field. The learners will enroll in the eLearning course because it is required. There are specific regulations provided by OSHA that must be met. The student's learning styles will vary. There will be a mix of auditory, kinesthetic, visual, and written learning styles. The learners' age will range from 18 years old and older. Also, the learners will most likely already know about the topic. However, there may be some learners who do not know about eye protection and hearing conservation. With that in mind, the content will need to cover the basics. In terms of the learners' education level, ethnicity, demographics, and area of study, all of those will vary. Most of the learners will be White males. The learners' preference will likely be web-based since they chose the online course rather than the in-person course.

Context

In terms of the setting in which the learners will use the new knowledge and skills after instruction is completed, the new knowledge they gain from the eLearning course will be applied in the field. Out in the field could mean in the warehouse, vehicle maintenance facility, substation, transmission line right-of-way, etc. An eyewash station and eye and hearing protection devices will be available to them. The knowledge gained will be relevant to the learners' workplace and personal life. In terms of the setting where the actual learning will take place, the course will be administered through the learning management system (LMS) at GTC. The director wants the course to be around 15 minutes in length to complete; however, the course will not be timed.

Content

The content covered in the eLearning course can be broken down into five categories: facts, concepts, principles and rules, and procedures. Here are a few topics covered in the online course: Eye protection policy (rules), Hearing conservation policy (rules), sound levels (facts and concepts), hearing loss symptoms and prevention (facts, concepts, and principles), steps to using an eyewash station (procedures). The eLearning course does not include any objectives related to interpersonal skills.

Instructional Objectives

It is now time to discuss precisely what skills and knowledge I want the learners to acquire from the eLearning course. After completing the eLearning course through the LMS, GTC associates will be able to:

1. Correctly examine sound levels based on the permissible sounds level chart provided by The National Institute for Occupational Safety and Health (NIOSH).
2. Correctly recognize five signs of hearing loss.
3. Correctly explain why hearing loss prevention is important.
4. Correctly identify two forms of hearing protection equipment.
5. Correctly describe when and where hearing protection devices should be utilized.
6. Correctly describe when and where eye protection devices should be worn.
7. Distinguish the difference between standard vs. nonstandard protective eyewear with 100% accuracy.
8. Illustrate the steps of using an eyewash station without error.

Instructional Strategies

The *Instructional Strategies* section outlines the instructional activities I want to present to the learners to help them achieve the goal or learning objectives. Dick and Carey use the term Instructional Strategy to describe the process of sequencing and organizing content, specifying learning activities, and deciding how to deliver the content and activities. Dick and Carey describe four elements of an instructional strategy:

1. Content Sequence and Clustering
2. Learning Components
3. Student Groupings
4. Selection of Media and Delivery Systems

Since the eLearning course is not meant to be a group activity, number three Student Groups will be omitted from the instructional strategies section.

Content Sequence and Clustering

The eLearning course was grouped into four parts: Introduction, Hearing Conservation, Eye Protection, and Final Quiz. It was grouped this way to make the course seem more inviting and quicker. In addition, the Hearing Conservation and Eye Protection parts were divided into smaller modules. Each module corresponded to one or two learning objectives. Ultimately, we used a micro-learning approach.

Learning Components

The learning components help learners get from where they are to where we want them to be. The first component was various learning styles: written, visual, auditory, and kinesthetic. Multiple forms of text satisfied written learners. The graph, video, table, and pictures satisfied the visual learners. The video satisfied the auditory learners. The matching and flashcards satisfied the kinesthetic learners. The second component was learning engagement aligning to standards. As an instructional designer, I had to adapt the learning experiences to a remote setting. This course is quite different from the in-person course. There are pictures throughout to increase engagement. Many kinds of Articulate Rise blocks are also used throughout the course to keep the learners interested in the material. The third component was providing learning guidance. There are numerous kinds of bulleted lists and bolded key points in the course—both increased readability. The fourth component was assessing the performance. I did this by including an 8-question final quiz at the end of the course. The examination had three different types of question formats to keep the learners engaged to the very end. The fifth component was informing learners of the objectives. I did this by including it in the course introduction and at the end of the course to remind the learners what they should have learned by completing the course. The sixth and final component was enhancing retention and transfer. This was achieved by designing the course to be completed in less than 20 minutes. Scientific research shows that an instructor can typically hold a learner's attention for around 20 minutes or less before the learner needs to move on to a different activity.

Selection of Media and Delivery Systems

The eLearning course will be delivered through GTC's internal LMS. All courses are offered through this system. The LMS administrator will be the person to implement the course in the LMS. In addition, the media was selected based on its relevance to the topic. Each module needed to have at least one form of media. Most of the media were chosen from the Articulate Rise photo gallery. The embedded video covering the steps to using an eyewash station was the same video delivered in the in-person course. Our company has already been permitted to use that video. Articulate Rise offers numerous forms of media, so I tried to include at least one of each type. Using various media types boosts learners' engagement and interaction. Restricted navigation was selected over open navigation since some learners would skip straight to the final quiz and not read the material. I restricted the navigation so that problem would not exist.

Instructional Materials

To help the learner achieve the learning objectives, I created a 15-minute eLearning course. The entire course was designed with Articulate Rise. Here are a few topics covered in the online course:

- Eye protection policy
- Hearing conservation policy
- Sound levels
- Hearing loss symptoms and prevention
- Steps to using an eyewash station

At the end of the course was an 8-question final quiz. In one of the eight questions, I included a previously introduced table in the course. The question corresponded to the first learning objective. In all, the course was engaging and informative.

Instructional Evaluation Plan

Evaluation is one of the most important steps in the design process, yet it's usually the step that gets left out. The summative assessment aims to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark. Formative evaluation involves collecting data and information during the development process that can be used to improve the effectiveness of the instruction.

Summative

To ensure the eLearning course allows learners to meet the learning objectives, I included the final quiz at the end of the course. The final quiz had eight questions. There was one question per learning objective. There were also three question formats: multiple choice, multiple response, and matching. To pass the course, the learners must score 100% on the final quiz. They are granted three total attempts. To provide more clarity as to why learners needed a 100%, as stated in the eLearning course, "Here at Georgia Transmission Corporation, we take the safety of our employees very seriously, which is why there is no room for error on this final quiz."

Formative

I used user testing to evaluate the training and improve it for its revision. I conducted a user test three times. The first two times I ran a user test, I did not include a final quiz. For the last user test, I had everything in the course. I was provided with very useful feedback from the participants. I used that feedback to make improvements to the eLearning course. Most of the feedback cover grammatical errors within the course.

Conclusions

In conclusion, the ADDIE model was used to complete this instructional design project. I faced a few challenges while completing the course. The first challenge was being limited to only using Articulate Rise, unlike my classmates who were able to utilize Articulate Storyline as well. I overcame this obstacle by completing training covering Storyline and looking at examples of courses made in Storyline and courses made in Rise with Storyline components. The second challenge was creating the final quiz. Creating questions and answer choices is not as easy as it appears. The examination had to be clear and concise since learners would not have access to an instructor for clarity. The third challenge was appealing to learners with a kinesthetic learning style. Due to the course's online nature, satisfying this kind of learner is difficult. I was able to work around this by incorporating matching elements and flashcards within the course. Even though that probably did not satisfy kinesthetic learners completely, it satisfied them to some degree.

For the eLearning course to be truly successful, there needs to be a 20% decrease in on-site ear and eye injuries. There also needs to be a 25% decrease in the number of learners taking the in-person Eye Protection and Hearing Conservation course offered by the Safety & Technical Training Department. Only time will tell if this course is a true success. Improvements will continuously be made to the course. The course will never be completely done. Instructional design is often an ongoing, iterative process.