

Final Project Report

Web Address:

<https://heatherdorrell.godaddysites.com/final-project-1>

Part 1 | The Need

Learning Experience Description, Importance, and Aims

Radiation Safety for Patient Care Staff is a five module, asynchronous, digital training course designed for employees in a hospital setting that work in the vicinity of radioactive equipment or substances. The course will be uploaded to WorkDay. WorkDay Learning is used by Human Resources and supports the delivery of online, in- person, or hybrid courses, and varies those courses for geographies, times, and departments.

The course will be designed using Articulate Rise 360 with embedded, an custom interaction created in Articulate Storyline 360, multiple videos created using Microsoft PowerPoint and ScreenPal Video Editor, and Eleven Labs Generative Voice AI for audio accompaniments. Both video and audio are uploaded mp4 files.

Articulate Rise 360 is a web application that publishes SCORM-compliant courses that play in WorkDay Learning on any desktop, laptop, and mobile device your learners choose.

Importance:

There is a normative need to ensure regulatory compliance, as this training is a requirement of the state's health department. One of the conditions of the hospital and university's license and registration requires that all individuals working with, as well as in the vicinity of, licensed material or radiation producing equipment, must have adequate radiation safety training commensurate with their duties.

At a staff meeting, managers expressed a need for an updated version of the training that included an accessible digital format, a more engaging digital presentation, inclusion of scenario-based learning opportunities, and inclusion of an evaluation and performance component. Other concerns mentioned were the inclusion of audio and closed captioning to the WorkDay training, an inclusion of a quick and easy user guide that employees can reference to be kept for personal use, and the addition of approved institutional branding. When looking at instructional design models, it was determined that there is no current evaluation system to gather qualitative and quantitative data on the quality of the training to improve or modify it, as needed.

During a recent meeting with the Radiation Safety Team, several concerns were raised about the current quality of the training.

1. **Accessibility** is a key concern with the current training, considering there is no audio, closed captioning, and Mayer's Principles of Design have not been incorporated into visuals. There are also no artifacts or study materials to help with information organization or as a guide for future referral.
2. **Appearance** is a key concern for certain members. The institution has recently released new requirements for branding instructional materials, which need to be incorporated into future publications. Design principles for slides have not been updated based on current research or current branding requirements.
3. **Effectiveness** is a key concern for trainers and managers. There are several students taking the course who are novices. The course and material are currently presented in a student-led format. Trainers and managers are interested in providing the appropriate amount of instructional support to all categories of learners regarding radiation safety. More scaffolding and support can be provided digitally to address effectiveness for certain groups of students.
4. **Evaluation** of the effectiveness of the course is not currently present. Data is only taken on whether the course was completed.

This is a required training for many staff. According to a verbal statement from the Health Physicist, the percentage of novices or those with low knowledge of radiation safety methods and concepts who are required to take this training is between 80-85%. However, there is no audio, no study guide, and the visuals are reportedly hard to understand.

If the quality of this training is not addressed, the felt and expressed needs of a revamping will be unmet. Continuing data collection after implementation will allow instructional designers to modify the training in the future, as needed.

Aims:

This training is offered to meet two needs:

1. To comply with a state regulation (12VAC5-481-2270) and
2. To increase compliance with other different, but relevant regulations and internal policies meant to enhance safety for workers.

The goals of the Radiation Safety Team in providing training are to:

1. Decrease radioactive contamination
2. Decrease documented breaches of protocol
3. Decrease radiation dose to staff

The State does not evaluate a hospital on the quality of a training course used to meet the regulation but requires that the training contains the items cited in the regulation. However, an inspector could determine that the training is inadequate through interviews with staff who have

completed it and who have violated regulations described within the training. The worker can claim they were not informed of the requirements.

Relevancy:

I am building this training with the hope that it will replace the current training at the institution. I hope to receive an endorsement from the Radiation Safety Team for my pro-bono work, along with the benefit of learning to build a training with new content and tools.

Learning or Instructional Context

Radiation Safety for Patient Care Staff is a five (potentially six) module, asynchronous, digital training course designed for employees in a hospital setting that work in the vicinity of radioactive equipment or substances. This training fulfills a regulation required by the state and is given to all employees who are issued a dosimeter. Because there are multiple working locations, different work schedules, and different onboarding timelines for each employee, the need for this training to be flexible in as many ways as possible is paramount. Therefore, it is key to add multimedia to the learner's experience to increase engagement and access to the material. Technological options were chosen to provide asynchronous, online delivery that can be accessed on any type of device.

A second form of training will continue while the employees are working in their specific roles. These training courses will be coordinated and conducted in person with group sizes ranging from small to large, depending on the need of each employee or group of employees. These trainings are held in meeting rooms or within the work environment. The moderator of the online course, the Health Physicist, is also the individual who coordinates in-person training and assessment.

Learner Audience

The targeted audience for this training is hospital personnel who work near radiation and require a radiation dosimeter. The target population for this training resides in three distinct locations: the main hospital, an auxiliary location, and an attached university. Patient care staff will receive this training, including employees, contractors, and contingent workers, resident physicians, physicians, registered nurses, health services employees, contractors, and academic faculty. Students of this course can be assigned this training by a manager, administrator, or they can self-enroll. The level of learner ranges from novice to expert in need of a refresher course on

the topic.

Learners are adults who speak English working in a hospital setting with radiation. There are no defining, common attributes beyond this. This is a very diverse group. Workers minimally possess a high school diploma or GED, but the majority have additional technical and/or academic training. Learners can potentially have a disability.

Subject–Matter Focus/Content

Instructional Sequence:

Introduction Module: Introduction to Radiation Safety Guide in a Hospital Setting

- No objectives. The module serves as an introduction to the course.
- Introduction Video
- Employee Survey

Module 1: Health Effects of Radiation and Importance of Training

- Objective 1: Identify the personal and instructional significance of radiation safety in a hospital setting.

Module 2: Radiation Protection Methods and Concepts

- Objective 2: Describe the use of three radiation protection methods (Time, Distance, and Shielding) and their significance in relation to the ALARA policy.
- Objective 3: Utilize ALARA radiation safety methods.

Module 3: Dosimeters

- Objective 2: Describe the use of three radiation protection methods (Time, Distance, and Shielding) and their significance in relation to the ALARA policy.
- Objective 3: Utilize ALARA radiation safety methods.
- Objective 4: Staff will describe the proper care and use of personal protective equipment, a dosimeter, and be able to read a personal exposure report as it relates to dose limits.

Module 4: Personal Protective Equipment

- Objective 2: Describe the use of three radiation protection methods (Time, Distance, and Shielding) and their significance in relation to the ALARA policy.
- Objective 3: Utilize ALARA radiation safety methods.
- Objective 4: Staff will describe the proper care and use of personal protective equipment, a dosimeter, and be able to read a personal exposure report as it relates to dose limits.

Module 5: Resources for Staff

- Objective 5: Staff will successfully utilize the Radiation Safety website to locate resources and points of contact necessary for a given scenario.

Module 6: Review

- Assessment

Message Design Specifications:

Pre-instruction

Module 0 will consist of a Home Page with a video link. A visual of the training's objectives will be available in the video, along with a sequence of Modules 1-6. An expert in a video will discuss an overview using a script. An employee survey will be included on this page to gather data on the audience.

Initial Presentation of Material

The objective for each Module will be presented visually, along with an audio introduction of what will be covered in the module. The initial presentations will use a vignette, a scenario, or an example/non-example of radiation safety practices in a hospital setting. These interactive options will serve as the Module's "hook" to engage learners in the material.

From there, the initial presentation for objectives will be presented using the RUL-EG method. Visuals and audio sound bars will be used to present the initial facts and concepts, along with examples for each fact and concept. Visuals will be a combination of decorative, representational, and interpretive. Each visual will signal the learner by using headings, colors, and specific layouts. Audio will provide additional cueing and signaling using a casual speaking voice, along with signaling words. These strategies will decrease the extraneous cognitive load of the learner.

Generative Activities

Generative Learning Strategies will be interspersed throughout the Modules at the end of sections or at topic transitions. Scenarios and questions about facts, concepts, and procedures will be presented in written form or by using a visual, along with multiple answers to choose from. The employee will be asked to choose the best answer listed. Then, immediate feedback on that answer will be given.

Review Activities / Retention Activities / Transfer Activities

*A review or summary will take place after generative learning strategies. At the end of all the modules, a general multiple-choice quiz will be taken where employees are expected to answer 90% of the questions correctly. Feedback will be given in a post-training final quiz, along with a percentage correct. This information will go to the Radiation Safety team to assist them in developing or revising future training. If the employee does not receive an accurate score, s/he will be asked to return to the portions of the training that need to be reviewed before retaking the quiz.

Retention and Transfer Activities take place while on the job. The Radiation Safety Officer in the hospital monitors the staff for compliance by observing at least once a week. Managers within each unit are trained to consult with the RSO if there are continuous issues with an employee's compliance. The state inspection occurs annually, and the institution receives a report detailing ways in which the staff can improve their radiation safety practices.

*There have been mixed opinions on whether the summative assessment is needed when reviewed by the SME, with training time and efficiency being cited.

Part 2 | Desired Learning Outcomes & Assessment

Instructional Objectives:

Objective 1: Staff will identify the personal and institutional significance of radiation safety in a hospital setting.

Objective 2: Staff will describe the use of three radiation protection methods (Time, Distance, and Shielding) and their significance in relation to the ALARA policy.

Objective 3: Staff will utilize their understanding of radiation safety concepts to practice ALARA.

Objective 4: Staff will describe the proper care and use of personal protective equipment, a dosimeter, and be able to read a personal exposure report as it relates to dose limits.

Objective 5: Staff will successfully utilize the Radiation Safety website to locate resources and points of contact necessary for a given scenario.

Desired Learning Outcomes	Assessment of Learning
Objective 4: Staff will describe the proper care and use of personal protective equipment, a dosimeter, and be able to read a personal exposure report as it relates to dose limits.	Knowledge Checks: Match: What is the permissible dose limit for each area of the body? Sort: Sort the phrases on the white flashcards into two categories: Dosimeter Do's and Don'ts Check all that Apply Multiple Choice: Worked Example: Which line of the Occupational Exposure Record is most important to review when receiving your annual dose report? Which of the following statements is true of Image 1? Which of the following statements is true of Image 2? Scenarios: Scenario One: ALARA Letter
Objective 5: Staff will successfully utilize the Radiation Safety website to locate resources and points of contact necessary for a given scenario.	Scenarios: Scenario One: Use the Website
Assessment	Multiple Choice: *Development in process with SME based on team feedback One question for each Objective answered with 90% accuracy or retake required.

Part 3 | Learning Experience Map | Activities, Sequencing & Strategies

Note: Instructional strategies and activities repeat throughout the training. The reason behind inclusion of each instructional strategy and activity is explained one time, although they may be listed multiple times within the Learning Experience Activities Column.

Learning Experience Activities	Evidence-Based Strategies & Guidelines
Introduction: Video: The purpose of including an introduction video is to provide an overview of the course content, objectives and structure to help learners understand what to expect and how the material will be organized. We also want to engage the learners by capturing their attention, building motivation, and providing a welcoming and personal touch to the training. List of Objectives Employee Survey: The purpose of including an employee survey is to assess learner readiness and skills. Understanding employees' motivations, goals, and perspectives helps personalize the information. Ultimately, an instructional designer can use this information to improve course design and delivery, target support where needed, and tailor any future communication to foster a supportive learning environment.	Introduction Video <i>Generative Strategies:</i> Information Processing <i>ARCS-</i>Grabs attention, highlights relevance, builds learner confidence <i>Multimedia Design-</i>Personalization, decreases cognitive load, multisensory engagement <i>UDL-</i>Multiple means of representation, action, expression, and engagement Employee Survey <i>Generative Strategies-</i>Active engagement and information processing <i>UDL-</i>Multiple means of representation, action, expression, and engagement <i>TPACK-</i>A digital survey aligned with the content with an efficient interface provides data and information for future course revisions.
Module 1: Health Effects of Radiation and Importance of Training Flashcard Grid The purpose of using a Flashcard Grid is to reinforce learning by providing active recall and retention of information. Interactive activities provide visual and auditory integration and engagement. Flashcards also clarify and summarize information while providing immediate feedback to learners. This activity is paired with an auditory activity to support learners who prefer to learn visually. Labeled Graphic	Flashcard Grid <i>Generative Strategies-</i>Active engagement and information processing <i>ARCS-</i>Attention, relevance, confidence, satisfaction <i>Multimedia Design-</i>Chunking, coherence and redundancy <i>UDL-</i>Multiple means of action, expression, and engagement <i>TPACK-</i>Supports recall and retention Labeled Graphic <i>Generative Strategies-</i>Active engagement and information processing, provides visual context

The purpose of using a Labeled Graphic is to chunk information to decrease cognitive load. Visuals illustrate the relationship between the training material and the workplace by providing context and detailed explanations. This interactive activity supports visual and kinesthetic avenues of active learning. Multiple Choice Questions The purpose of including multiple choice questions throughout the training is to reinforce learning and understanding of the material, promote interactive learning, provide instant feedback by correcting misconceptions, and increase learner retention. Learners can monitor their own progress. *There is a potential added benefit for others to monitor progress to assess learner retention or the success of the curriculum design/content.	<i>ARCS</i>-attention and relevance <i>Multimedia Design</i>-Multisensory engagement <i>UDL</i>-Multiple means of representation, action, expression, and engagement <i>TPACK</i>-Makes abstract information easier to understand and aligned with learning objectives. Multiple Choice Questions <i>Generative Strategies</i>-active engagement and interactive processing, immediate feedback <i>ARCS</i>-Attention, relevance, confidence, and satisfaction <i>Multimedia Design</i>-Cognitive load coherence redundancy, multisensory engagement <i>UDL</i>-Multiple means of expression and engagement <i>TPACK</i>-Provides learners with immediate feedback, collects data, formative assessment tool, reinforces learning, aligns with and reinforces content objectives
Module 2: Radiation Protection Methods and Concepts Sound Bar (Introduction) Labeled Graphic Visual with Text (Real-Life Example) Sound Bar (Explanation) Visual with Text (ALARA) Multiple Choice Question-ALARA Visual with Text (Protection Method: Time) Visual with Text (Concept Scatter Radiation) Sound Bar (Explanation) Scenario (ALARA and Time)/Multiple Choice Question Visual with Text (Protection Method: Distance)	Sound Bar The purpose of adding sound bars to the material is to increase retention and comprehension by adding the opportunity for multimodal learning and accessibility of material. By supporting visual and auditory modes of learning, learners can decrease cognitive load by increasing their ability to focus on the important content. <i>Generative Strategies</i>-Provides explanations and facilitates summarization <i>ARCS</i>-Attention, relevance, confidence <i>Multimedia Design</i>- <i>UDL</i>-Multiple means of representation, engagement, action and expression <i>TPACK</i>-Audio allows for two channels of information and caters to auditory learners to increase retention of key concepts. Visual with Text The purpose of including visuals with texts in the training is to engage the learner, provide multiple

Sound Bar (Explanation)	channels of information, include those with different learning styles, to add clarification and emphasize key points in the content, increase understanding and improve retention of the information presented.
Visual with Text (Concept: Inverse Square Law)	
Scenario (ALARA and Distance)/Multiple Choice Question	<i>Generative Strategies</i> -Active engagement, information processing, provides visual context
Visual with Text (Shielding)	<i>ARCS</i> -Attention, relevance, confidence, satisfaction
Visual with Text (Examples of Shielding)	<i>Multimedia Design</i> -People learn more when pictures are included with text. Contiguity and Coherence Principles
Sound Bar (Explanation)	<i>UDL</i> -Multiple means of representation, engagement, action and expression
Scenario (Shielding and ALARA)/Multiple Choice Question	<i>TPACK</i> -A designer must incorporate relevant visuals and text by applying pedagogical and content knowledge.
Visual with Text (Concept: Exposure versus Radiation)	Scenarios:
Sound Bar (Explanation)	The purpose of including scenarios is to provide an opportunity to use critical thinking skills to problem-solve a real-life scenario, provide practical experience, contextualize the information they are learning, engage and motivate learners, and provide immediate feedback about their decisions.
Visual with Text (External Exposure to Radiation)	<i>Generative Strategies</i> -Deeper processing, contextual learning
Sound Bar (Explanation)	<i>ARCS</i> -Attention, relevance, confidence, satisfaction
Visual with Text (External Contamination)	<i>Multimedia Design</i> -Multimedia and Coherence principles
Sound Bar (Explanation)	<i>UDL</i> -Multiple means of representation, engagement, action and expression
Visual with Text (Internal Exposure to Radiation)	<i>TPACK</i> -: A designer must understand the content at a deep level, be able to design a scenario that promotes critical thinking and problem-solving skills and create scenarios using technology to enhance engagement.
Sound Bar (Explanation)	Website Links
Multiple Choice Questions (Three)	The purpose of including links to pertinent websites is to provide a reference for additional material needed for a complete knowledge base. These links provide interactivity and connect the training to real-life
Scenario (Contamination versus Exposure)/Multiple Choice Questions	
Link to EHS Website	

	resources and workplace information. <i>Generative Strategies</i>-Promotes exploratory learning, adds context <i>ARCS</i>-Attention, relevance, confidence, and satisfaction <i>Multimedia Design</i>-Coherence Principle <i>UDL</i>-Adds varying perspectives, additional resources, adds opportunity for enrichment <i>TPACK</i>-A designer must understand how websites relate to course content and be able to upload those with the technology.
Module 3: Dosimeters Sound Bar (Introduction) Visual with Text (Dosimeters) Bulleted List (Regulations) Accordion with Text and Visuals (Radiation Sources) Interactive Tabs (Dosimeter Basics) Video (Directions for Holder) Link to Dosimeter Program Website Visual with Text (Pregnancy) Word Document Visual Aid (Instructions) Multiple Response Check List (Dosimeter Rules) Video (Dose Limits) Note (Units of Measurement) Chart (Dose Limits) Match (Dose Limits) Flashcard Grid (Exposure Reports) Bulleted List with Link (Access to Report) Chart (ALARA Level II Dose Limits) Bulleted List (ALARA Letter) Link (Radiation Program Manual) Link (Dosimetry Program Website) Multiple Response Checklist (Employee Tasks)	Bulleted List The purpose of providing bulleted lists is to provide clarity and structure to text, chunk information into manageable visual pieces, increase comprehension and retention, allow for efficient scanning of material, and provide a structure for diverse learners. <i>Generative Strategies</i>-Chunking, provides a visual structure <i>ARCS</i>-Helps learners maintain focus, relevance, confidence, satisfaction <i>Multimedia Design</i>-Summarizes key points, lists avoid extra details to help with cognitive load, Coherence and Segmenting Principle <i>UDL</i>-Provides a quick reference, chunks information, holds interest, structures a learner's focus <i>TPACK</i>-A designer improves efficiency and retention of content with bulleted lists. Interactive Activities (Accordion, Tabs) Interactive activities, such as accordions and tabs, help organize and structure the content in a section. It allows for chunking and the addition of visuals with text. It improves course navigation while increasing

Multiple Choice (Worked Example-Reading a Report)

Branching Scenario (ALARA Letter)

engagement by requiring the learner to engage with the screen. Interactive activities encourage exploration of the content and improve visual appeal.

Generative Strategies-Self directed learning, imagery, concept mapping, keyword method, and summarizing

ARCS-Provide interactions that have an organized presentation, learners access information to decrease cognitive load and increase confidence

Multimedia Design-Segmenting, Coherence Principle, Modality Principle, Redundancy Principle, Signaling Principle

UDL-Organizes content and controls information access, encourages exploration, reduces cognitive load and supports diverse learning preferences

TPACK-A designer must understand the content and when this type of organization is most optimal to include.

Video (Directions for Holder)

The purpose of including this video is to provide a visual aid to help them attach a dosimeter with a holder to their person.

*See previous video explanation for how this relates to Learning Frameworks

Visual Aid

The purpose of providing a visual aid is to provide a quick guide for employees that they can use at a workstation. This supports different learning styles and supports accessibility for those who do not have time to look up information when they need it.

Generative Strategies-Summarizes important information in one place

ARCS-Attention, relevance, confidence, satisfaction

Multimedia Design-Coherence, Summarizing, Modality, Personalization, Redundancy Principle

UDL-Multiple means of representation, engagement, action and expression

TPACK-Providing a visual aid requires content knowledge, along with an understanding of the

	audience needs. Chart The charts in this section help learners provide visual organization to the information presented. Charts simplify the information, improve retention, help learners interpret the measurements, and accommodate visual learners. <i>Generative Strategies</i>-Organization, chunking, structure, visual representation <i>ARCS</i>-Provides a visual that highlights key info, provides relevant and practical info, breaks down complex info in structured way, allows learner to interpret info more efficiently <i>Multimedia Design</i>-Decreases cognitive load, simplifies information <i>UDL</i>-Offers an alternative way to present information, option to analyze numbers in a different way <i>TPACK</i>-A designer must understand and interpret various measurements in order to provide the most optimal one in the content, place the chart in the appropriate sequence, and know how to use the technology in order to create a chart. Match The purpose of the matching activity is to reinforce learning, encourage learner engagement, offer an activity where they can apply their knowledge, and provide immediate feedback. <i>Generative Strategies</i>-Summarizing, Organizing, Active Learning, Self-Assessment <i>ARCS</i>- Attention, relevance, confidence, satisfaction <i>Multimedia Design</i>-Segmenting Principle, Personalization Principle <i>UDL</i>-Provides a different format for demonstrating proficiency with the material, encourages active participation, adds a game-like element to increase engagement <i>TPACK</i>-A designer must know the content and how best to provide an activity in the technology.
--	---

Module 4: Personal Protective Equipment Sound Bar (Introduction) Visual with Text (PPE-Radioactive Equipment) Visual with Text (PPE-Radioactive Material) Carousel Visual with Text (Example and Non-example) Sorting Activity (Dosimeter Do's and Don'ts) Visual with Multiple Choice Question (Identifying Examples and Non-Examples) Visual with Multiple Choice (Identifying Examples and Non-Examples)	Sorting Activity The purpose of the sorting activity is to reinforce learning, encourage learner engagement, offer an activity where they can apply their knowledge, and provide immediate feedback. <i>Generative Strategies</i>- Summarizing, Organizing, Active Learning, Self-Assessment <i>ARCS</i>-Attention, relevance, confidence, satisfaction <i>Multimedia Design</i>- Segmenting Principle, Personalization Principle <i>UDL</i>-Provides a different format for demonstrating proficiency with the material, encourages active participation, adds a game-like element to increase engagement <i>TPACK</i>- A designer must know the content and how best to provide an activity in the technology.
Module 5: Resources for Staff Sound Bar (Introduction) Bulleted List (Why Report) Link to Website (VDH)/Visual with Text Accordion with Visuals/Text/Links Link to Website (Radiation Safety Website) Process Video (Website Tour) Scenario (Use the Website)	Video (Website Tour) The purpose of this video is to provide a visual walk-through of the most used and important information located on the website. This helps those learners who benefit from multimedia engagement. See previous explanations
Module 6: Assessment Multiple Choice Review Questions (One for Each Module)	See previous explanations

Part 4 | Technology Selection

Technology 1:

Technology

Articulate Rise 360

<https://www.articulate.com/360/rise/>

Learning Experience Activities

Articulate Rise 360 is an eLearning Authoring Tool that assists instructional designers with creating responsive, microlearning modules with interactive content, scenario-based learning, and easy multimedia integration. It's ideal for quick, mobile-friendly training. I chose this technology for its responsive design, ease of use, interactive features, multimedia integration options, collaboration and review options, and sharing options.

Affordances

1. Responsive Design (Mobile-Friendly, No Coding Required)
2. Ease of Use (User-Friendly Interface, Pre-Built Templates)
3. Content Blocks (Flexible Content Blocks, Customizable Layouts)
4. Interactive Features (Quizzes, Assessments, Interactive Elements)
5. Multimedia Integration (Video and Audio Support, Inclusion of Media)
6. Collaboration and Review (Allows for Team Collaboration, Review, Feedback)
7. Analytics and Tracking (SCORM/ xAPI Compatibility, Reporting through LMS)
8. Accessibility Features (Keyboard Navigation, Screen Reader Compatibility)
9. Localization and Translation (Multi-Language Support)
10. Publishing and Sharing (Easy Publishing, Export Options as HTML5)

Technology 2:

Technology

Eleven Labs Generative Voice AI

<https://elevenlabs.io/app/voice-lab>

Learning Experience Activities

Eleven Labs Generative Voice AI is a technology that specializes in (TTS), voice generation, and cloning. I chose this technology to enhance learners' experience by providing audio content as a preference or choice. After researching several tools, Eleven Labs provided the most human-like text-to-speech options, flexible integration with Articulate Rise, high-quality audio output, real-time generation for content modification purposes, and a user-friendly

interface.

Affordances

1. High quality, Natural-sounding Voices (Human-like Speech, Variety of Voices)
2. Advanced Customization (Voice Cloning, Personalization)
3. Context-Aware Speech Generation (Emotional Tones, Replicates Natural Speech Patterns)
4. Multi-Language Support (Global Reach, Accent Variations)
5. Flexible Integration (API Access, MP4 Files, Compatibility)
6. High-Quality Audio Output (Clear, Crisp, Adaptive Noise Reduction)
7. User-Friendly Interface (Easy Input of Text and Selections, Previews, and Edits)
8. Real-Time Generation
9. Custom Voice Models
10. Content Adaptation

Technology 3:

Technology

Articulate Storyline 360

www.articulate.com/360/storyline/

Learning Experience Activities

Articulate Storyline 360 is an eLearning authoring tool that provides instructional designers with options to customize learning experiences to a higher degree than Articulate Rise 360. I became more familiar with Storyline by creating an Employee Survey for the Home Page of the training. I chose Storyline, because there did not appear to be an option for this interaction in Articulate Rise 360, and I was able to customize the experience in Storyline 360.

Affordances

1. Interactive Slide Creation (Slide-based Design, Layering and States)
2. Advanced Interactivity (Triggers, Actions, Variables, Conditions)
3. Media Integration (Multimedia Support, Screen Recording)
4. Responsive Design (Responsive Player, Mobile Compatibility)
5. Customizable Templates and Themes (Pre-Built Templates, Custom Themes)
6. Quiz and Assessment Creation (Question Types, Feedback, Scoring)
7. Accessibility Features (Accessible Content, Accessibility Checker)
8. Collaboration and Review (Articulate Review, Team Collaboration)
9. Publishing and Sharing (Variety of Export Options, Direct Publishing)

10. Tracking and Analytics (LMS Integration, Analytics)
11. Customizable Player and Navigation (Player Customization and Navigation Controls)
12. Multi-Language Support

Technology 4:

Technology

ScreenPal Solo Deluxe

<https://screenpal.com/>

Learning Experience Activities

ScreenPal is a screen recording and video editing tool used to create instructional videos. I used ScreenPal Solo Deluxe and created two videos: a Radiation Safety Website Tour and a Project Presentation Video. I chose ScreenPal because I was able to use the free version to create webcam recordings, screen recordings that can be narrated, and several video editing tools. I also appreciate that I can record videos up to 15 minutes long, record unlimited videos, and export the videos in a compatible format. The pricing is reasonable, the watermark is not distracting to the learner, and this is one of the few tools that provides closed captioning at a lower price. I chose to upgrade to the Solo Deluxe to use the Storyboard feature to splice together shorter videos into a longer one.

Affordances

1. Screen Recording (Full Screen, Region Capture, Webcam Recording, Audio Recording)
2. Video Editing (Trimming, Cutting, Text and Annotations, Transitions, Effects)
3. Customizable Recording Settings (Resolution and Frame Rate, Recording Timer)
4. Publishing and Sharing (Direct Upload, Export Options)
5. Cloud Integration and Storage
6. Interactive Elements (Quizzes, Surveys, Call-to-Action Buttons)
7. Screen Drawing and Highlighting (Drawing Tools, Highlighting and Cursor Effects)
8. Editing and Enhancements (Audio Edition, Video Filters and Effects)
9. User-Friendly Interface (Easy Navigation, Guided Tutorials)
10. Collaboration Tools (Review and Feedback)
11. Video Analytics and Advanced Customization for some plans

Technology 5:

Technology

Microsoft PowerPoint

<https://www.microsoft.com/en-us/microsoft-365/powerpoint>

Learning Experience Activities

Microsoft PowerPoint is a commonly used presentation software application for creating visually appealing presentations. I used Microsoft PowerPoint to create the Introduction Video Presentation on the Home Page of the training. I also used it to create several visuals throughout the course, as needed. I used branded templates created by the institution for many of these visuals. The training we are recreating was originally in PowerPoint form on WorkDay.

Affordances

1. Slide Creation and Design (Slide Templates and Themes, Custom Slide Layouts)
2. Text and Typography (Text Formatting, Alignment, Spacing)
3. Multimedia Integration (Image Insertion, Audio, Video, Screen Recording)
4. Visual Enhancements (Shapes, Icons, Transitions, Animations)
5. Charts and Data Visualization (Chart Creation, Data Integration)
6. Collaboration and Sharing (Comments and Reviews)
7. Presentation Tools (Presenter View, Slide Show Controls)
8. Accessibility Features (Accessibility Checker, Alt Text for Images)
9. Customizable Features (Master Slides, Custom Animations)
10. Export and Publishing Options (Several File Formats, Online Sharing)
11. Integration with Other Microsoft Apps (Excel, Word, Teams, OneNote)
12. Design and Layout Tools (Design Ideas, Gridlines, Rulers)
13. Advanced Features Available (Data-Driven Graphics, AI Features)

Other Technologies:

Technology

Google Documents and Drive, Microsoft Word, MindMeister, Snipping Tool, YouTube

Learning Experience Activities

I used a few other tools for background work on this project. Since most of these tools are not at the forefront of the project, I will not include a full description of each and will state the affordance I used for this project.

Affordances

1. Google Documents and Drive (Sharing Documents and Scripts with SME for Review and Edits)
2. Microsoft Word (Reports and Documentation of Ideas)
3. MindMeister (Brainstorming and Visual Organization of Ideas)
4. Snipping Tool (To Gather Visuals for the Project)
5. YouTube (Use of Videos)-These will be phased out over time.

Part 5 | Evaluation Plan

Evaluation Aims:

The purpose of evaluation is to improve student performance by improving the experience for the learner. Formative evaluations help instructional designers improve various aspects of the instruction, while summative evaluations prove that the instruction was successful.

Evaluation Use:

The main purpose of the Formative Evaluation for my training is to satisfy the administrative requirements of the institution. This course is a requirement of the Department of Health, so completion data will be collected. Since the institution and state have requirements regarding refresher timelines for this course, the date of completion will be collected as data.

The Formative Evaluation will also be used by the instructional designer to improve the learner experience. The current training offered to staff has no evaluation, so gathering information about the cohort of learners, including their background knowledge and motivations for taking the course is important. Formative evaluation techniques will also help instructional designers clarify the instructional needs of the students and add engagement to the curriculum.

The Radiation Safety Team has not determined whether collecting summative data in the form of a post-assessment with a required completion score of 90% or higher is important to the overall training need. Direct testing provides information by multiple choice and matching constructed responses, as well as information about the time and date of completion for compliance purposes.

Ongoing analysis of training success uses direct and indirect observations of employees by the Radiation Safety Officer and the managerial staff of each department within the work environment. Direct and indirect observations happen on a regular basis.

It is recommended that the Radiation Safety Team look at the time that it takes the employee to complete the training, the validity and reliability of each test question, and send a post-training survey to gather information about opinions, interests, and attitudes.

Formative Evaluation Methods:

Radiation Safety for Patient Care Staff in a Hospital Setting is being created using Rapid Prototyping. The reason behind this method is due to time constraints of the Subject Matter Expert involved in the collaboration of the design. The ability to create the prototype in Articulate Rise allows remote collaboration. Along with creating the training using Expert Review by consulting with technical experts, other instructional design students, and the subject matter expert, the SME and I engage in Self Evaluation and Think Aloud Protocol throughout the process.

Once the Rapid Prototype is completed, the plan moving forward is to present the training as an alternative to the existing option by conducting a Panel Review with the Radiation Safety Officer on staff, along with his manager. When looking at the SAMR Model, the redesign of this training falls in the redefinition category of change by allowing for the creation of new tasks, including interaction with the material and the inclusion of multimedia. It is such a change from the current format, we are guessing there will be some feedback regarding next steps.

If the panel is open to moving forward with the training after suggestions, for the purpose of saving time, the SME will Field Test the online training in an in-person session with various employee cohorts in Small Group Sessions. These sessions will allow for Two-on-One discussions and include qualitative surveys at the end to determine user experiences with the training. The Field-Testing Timeline is yet to be determined, and will be based on the panel review results, the timing of release and other constraints.

Once information is gathered from the Small Group Sessions, and the training is revised, the training will be released to everyone that requires it based on state regulations. Once it is released, background and motivational information will be requested of each participant. The training will also include direct testing, and an employee survey will be sent via email after completion of the training to assess the learner's experience and the time required for completion.

A detailed breakdown of how often information is gathered will be reviewed by the instructional designer and team members is charted below.

Evaluation Criteria and Data:

Formative Evaluation Data:

The main purpose of the Formative Evaluation for this training is to satisfy the administrative requirements of the institution. This course is a requirement of the Department of Health, so completion data will be collected. Since the institution and state have requirements regarding refresher timelines for this course, the date of completion will be collected as data.

Although it is not required, best practices would suggest an inclusion of a Small Group Session and a Field Test in which the SME collects information from co-workers regarding the effectiveness of the instruction based on the summative assessment and continued observations of work-related concerns, as well as the general reception of the materials.

This data will be used to enhance the learner's experience to increase student performance. This data may be used to adjust the curriculum included based on background knowledge level and motivation. Questions, scenarios, interactive activities, and other aspects of the design may be revised based on feedback. Of particular interest for this project is the amount of time learners want to spend completing this training, since the old training was a PowerPoint slide deck that could be clicked through within a minute or two.

DATA TO BE COLLECTED		
<i>DATA TYPE</i>	<i>SPECIFIC INFO/USE</i>	<i>SOURCE</i>
Analysis	Completion Date/Compliance	Workday
Expert Review	Discussion on Elements of Instructional Design and Process Use: Organize, design, and refine content	UVA Group Discussion Boards and Peer Reviews
Expert Review	Discussion on Content Refinement, Regulations, Workplace Constraints Use: Organize, refine, and validate content	Subject Matter Expert Interviews and Collaborations and Think Aloud Protocols
Panel Review	Confirmation of specific requests, including assessment needs	Managers and Administrators
Small Group Sessions (2 Minimum)	Within six months of the Panel Review 1. Posttest Score/Effectiveness 2. Post Instruction Survey/Audience Reception Use: Modifications to materials, test questions, or length of training	Face to Face, Small Group Sessions with Opportunities for Two on One Discussions
Field Test	Within one month of Revision post Small Group Session 1. Posttest Score/Effectiveness 2. Employee Email Survey/Audience Reception Use: Modifications to materials, test questions, or length of training	1. Workday Spreadsheet 2. Returned Survey Responses
Employee Survey	Measure of Learner Engagement and Quality of Instruction/Future Revisions	Email Survey

EVALUATION SCHEDULE	
Start Date begins on 1/1 of Each Year and Ends on 12/31 of Each Year:	
<i>DATE(S)</i>	<i>ACTIVITY(IES)</i>
Monthly	Completion Date/Refresher
Biannually	Collect and Aggregate Email Surveys

Summative/Confirmative Evaluation Data:

The effectiveness of the program will be measured during the formal observations and employee evaluations annually. Biennially, the State Department of Health and Safety will conduct its own observation and evaluation that will be published in a public report available for everyone to read. Additionally, the Radiation Safety Office receives dosimeter reports quarterly, and employees receive them annually. The numbers on these reports can be analyzed to determine whether an employee is following Radiation Safety Protocols and Procedures. Other incidents, including those involving radiation contamination, are documented and tallied annually to establish patterns in performance.

DATA TO BE COLLECTED		
<i>DATA TYPE</i>	<i>SPECIFIC INFO/USE</i>	<i>SOURCE</i>
Direct Testing	Completion, Date Completed, Scores/Compliance and Effectiveness	Workday
Observations	Compliance and Effectiveness	Managers, Radiation Safety Officer, and Manager Input
Employee Survey	Measure of Learner Engagement and Quality of Instruction/Future Revisions	Email Survey
Expert Review, Panel Review, Small Group Sessions, Field Test	Posttest Score/Effectiveness Post Instruction Survey/Audience Reception Use: Modifications to test materials, Audience Reception	Workday Spreadsheet Returned Survey Responses

EVALUATION SCHEDULE	
Start Date begins on 1/1 of Each Year and Ends on 12/31 of Each Year:	
<i>DATE(S)</i>	<i>ACTIVITY(IES)</i>
Monthly	• Compile Completion Data • Compile Completion Dates • Send Refresher Reminder Emails • Send Post-training Survey Emails

Quarterly	- Complete Informal Walk-through Observations and Send Report to RSO - Assess Dosimeter Report and Conduct Inquiries
Annually	- Compile, Assess, and Revise Training based on Summative and Formative Data - Revise Training Materials as Needed - Complete Formal Walk-through Observations with Rubric - Employee Formal Evaluations - Employees Receive and Assess Dosimeter Reports and Conduct Personal Inquiries
Biennially	State Department of Health and Safety Conducts Formal Evaluation and Creates a Public Report

DATA TO BE COLLECTED		
<i>DATA TYPE</i>	<i>SPECIFIC INFO/USE</i>	<i>SOURCE</i>
Analysis	Overall Score/Effectiveness of Training	Workday
Informal and Formal Observations	Compliance and Effectiveness/Revision of Training or Staff	Internal Rubric
Employee Survey	Measure of Learner Engagement and Quality of Instruction	Email Survey
Dose Limits	Measure of Following Radiation Safety Protocols	Dosimeter Reports

EVALUATION SCHEDULE	
Start Date begins on 1/1 of Each Year and Ends on 12/31 of Each Year:	
<i>DATE(S)</i>	<i>ACTIVITY(IES)</i>
Monthly	- Send Post-training Survey Emails - Analyze Assessment Scores
Quarterly	- Complete Informal Walk-through Observations and Send Report to RSO - Assess Dosimeter Report and Conduct Inquiries
Annually	- Compile, Assess, and Revise Training based on Summative and Formative Data - Revise Training Materials as Needed - Complete Formal Walk-through Observations with Rubric - Employee Formal Evaluations - Employees Receive and Assess Dosimeter Reports and Conduct Personal Inquiries
Biennially	State Department of Health and Safety Conducts Formal Evaluation and Creates a Public Report

Part 6 | Project Deliverables Timeline

Task	Due Date	Hours to Complete Task
Meeting with the Subject Matter Expert to discuss Instructional Problem and Learner Characteristics	09/2023	1.5 Hours
Create Needs Analysis	09/2023	2 Hours
Gather and Review Instructional Documents from Subject Matter Expert	09/2023	.5 Hours
Meet with the Subject Matter Expert to Review Instructional Objectives and Content Sequencing	10/2023	2 Hours
Create Task Analysis and Mind Map	10/2023	4 Hours
Meet with Subject Matter Expert to Review Mind Map and Revise Task Analysis and Content Sequence	10/2023	2 Hours
Revise and Finalize Task Analysis and Instructional Objectives	10/2023	4 Hours
Align and Design Instructional Strategies with Objectives and Task Analysis	10/2023	8 Hours
Meet with the Subject Matter Expert to review Instructional Strategies and Instructional Message	10/2023	1 Hour
Research eLearning Authoring Tool and Confirm Choice with Subject Matter Expert	11/2023	4 Hours
Create a Style Guide for Approval by the Subject Matter Expert	11/2023	1.5 Hours

Create Message Design and Scripts	07/2024	40 Hours *15 in 2024
Review Scripts with Subject Matter Expert and Modify as Needed	07/2024	8 Hours *2 in 2024
Create Evaluation Plan	07/2024	8 Hours *2 in 2024
Input Design into Articulate Rise 360	07/2024	50 Hours *20 in 2024
Research Text-to-Speech Tool Options and Confirm Choice	11/2023	1.5 Hours
Input Scripts into Eleven Labs Generative Voice AI, create MP4 files, and upload to Articulate Rise 360	07/2024	8 Hours *1.5 in 2024
Research Video Editing Tools and Confirm Choice	06/2024	1 Hour
Research and Choose Hardware to Support Video Production (Ring Light and Blue Snowball Microphone)	06/2024	1.5 Hours
Secure Time and Location of Video Recording with Subject Matter Expert	07/2024	1.5 Hours
Record Video for Introduction to Training	07/2024	6 Hours
Increase Familiarity and Create Employee Background Survey in Articulate Storyline	07/2024	6 Hours
Meet with Subject Matter Expert to Review Training, Adjust, and Ask About Future Additions	07/2024	1 Hour
Create Website Tour Video with ScreenPal and Upload to Articulate Rise	07/2024	1 Hour

Review Training, Edit Material, Customize Theme, and Add Additional Cueing to the Training	07/2024	2 Hours
Evaluation by a Panel of Experts and Revisions	07/2024	2 Hours
Hours	Fall 2023	105.5 Hours
Hours	Spring 2024	62.5 Hours
Total Hours to Complete Project:		158 Hours
Tasks TBA:		
Adding Closed Captioning to Introduction Video		08/2024
Checking Accessibility with Quality Matters		08/2024
Presentation of Training to Review Panel		0/9/2024
Revisions		09/2024
Uploading to SCORM or LMS to Gather Data		By 02/2025
Implementation		By 03/2025
Continued Evaluation		See Plan

References

- Articulate. (2023, December 11). *Website*. Retrieved July 29, 2024, from <https://www.articulate.com/>
- Bauder, D. K., Cooper, K. M., & Simmons, T. J. (2019). SAMR strategies for the integration of technology through UDL. *Universal Access Through Inclusive Instructional Design*, 141-152. <https://doi.org/10.4324/9780429435515-18>
- Bower, M. (2017). *Design of technology-enhanced learning: Integrating research and practice*. Emerald Group Publishing.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32. <https://doi.org/10.2307/1176008>
- II Eleven Labs. (2024, July 29). *Website*. ElevenLabs. Retrieved July 29, 2024, from <https://elevenlabs.io/>
- Fiorella, L., & Mayer, R. E. (2015). Eight ways to promote generative learning. *Educational Psychology Review*, 28(4), 717-741. <https://doi.org/10.1007/s10648-015-9348-9>
- Goode, A. & Welling, M. *Radiation Safety Guide Lecture for Patient Staff Care*. University of Virginia Workday. <https://www.myworkday.com/uva/learning/course/60f63300d4b60122d875276f7501e530/lesson/8a0301ec73c710010ed923acbbac0003?record=d4aa2569e16d1001f099341035b90001&type=9882927d138b100019b928e75843018d>
- Instructions to workers. 12VAC5-481-2270. § 32.1-229 (2006 & am. 2008). <https://law.lis.virginia.gov/admincode/title12/agency5/chapter481/section2270/>
- Keller, J. M. (1987). Development and use of the ARCS model of instructional design. *Journal of Instructional Development*, 10(3), 2-10. <https://doi.org/10.1007/bf02905780>
- Koehler, M. J., Mishra, P., & Cain, W. (2013). What is technological pedagogical content knowledge (TPACK)? *Journal of Education*, 193(3), 13-19. <https://doi.org/10.1177/002205741319300303>
- Mayer, R. E. (2014). Principles based on social cues in multimedia learning: Personalization, voice, image, and embodiment principles. *The Cambridge Handbook of Multimedia Learning*, 345-368. <https://doi.org/10.1017/cbo9781139547369.017>

- Roediger, H. L., & Butler, A. C. (2011). The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences*, 15(1), 20-27.
<https://doi.org/10.1016/j.tics.2010.09.003>
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning*.
- ScreenPal. (2023, August 24). *Video Editor*. ScreenPal (Formerly Screencast-O-Matic). Retrieved July 29, 2024, from <https://screenpal.com/>
- Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257-285. https://doi.org/10.1207/s15516709cog1202_4
- Tessmer, M. (1993). *Planning and conducting formative evaluations: Improving the quality of education and training*.
- Tessmer, M. (2008). Formative evaluation alternatives. *Performance Improvement Quarterly*, 7(1), 3-18. <https://doi.org/10.1111/j.1937-8327.1994.tb00613.x>
- United States Nuclear Regulatory Commission. (2022, December 13). *Safety Culture Policy Statement*. <http://www.nrc.gov/about-nrc/safety-culture/sc-policy-statement.html#traits>
- University of Virginia University Communications. (n.d.) *About the UVA Brand*. <https://brand.virginia.edu/brand-basics/about-the-uva-brand>
- University of Virginia Environmental Health & Safety. (2023). Radiation Safety. ehs.virginia.edu/radiation-safety.html
- University of Virginia Environmental Health and Safety. (2020, July 2). *Safety Culture at the University of Virginia Policy Statement*. <https://ehs.virginia.edu/ehs/rs/rs.documents/UVA-Safety-Culture-Policy-Statement.pdf>