

# LLNL's Journey to Improve Educational Inclusiveness: Designing Training for Differently-Abled Learners

EFCOG Training Working Group Meeting

Dr. Phillip Weiss  
Mark Hagerty

March 2023



# START WITH THE END IN MIND...

---

In regard to differently-abled learners, my organization currently:

- A. has a robust set of standards for instructional design (ID)**
- B. has some ID standards and/or guidelines but we could do better**
- C. has not established anything in this area... yet**
- D. is somewhere on a path not listed above**

# PROBLEM

All differently-abled LLNL employees cannot learn effectively from many existing eLearning courses

- This includes our Deaf/hearing-impaired and color-blind employees along with other employees with differing neurodiversity needs

Section 508 compliance is a Congressional mandate

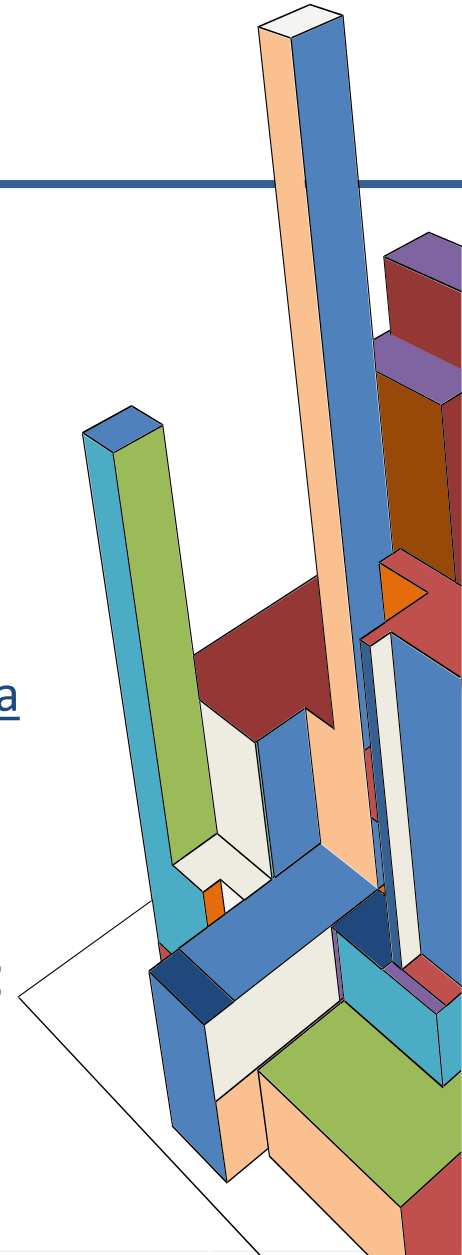
- While Congress has enforced this mandate, the current Administration is now [focusing more on compliance in this area](#)

All employees don't have a quiet place to learn

- Some may/may not have headsets

English as a second/third/etc. language learners don't always learn best through English auditory methods

- Imagine having to translate everything in your head from English to your more familiar language while taking an eLearning course



# SOLUTION

## Formed a team

- Included those with direct LXD experience and subject matter experts (e.g., LLNL Representative to represent Deaf/hearing-impaired employees)

## Determined a scope

- Initial efforts will be to respond to Deaf/hearing-impaired employee needs; additional neurodiversity needs addressed next

## Determined deliverables

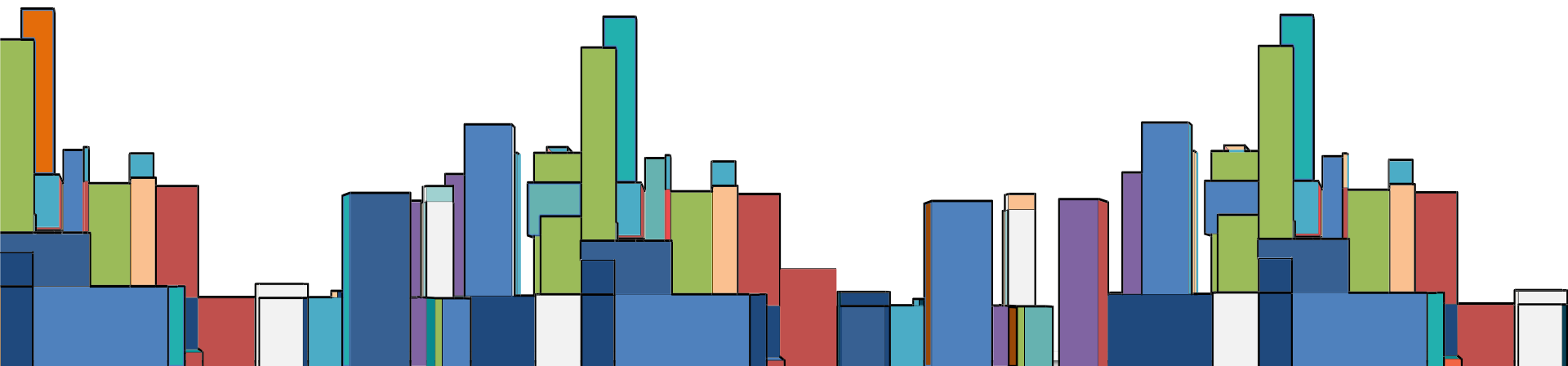
- Guidelines for course design
- Example template for eLearning courses

## Set a milestone date

- Draft deliverables to be completed in two months from team start

# THE LLNL DIFFERENTLY-ABLED LEARNING PRACTICES SUPPORT TEAM

- Mark Hagerty - Team Lead, LXD
- Kevin Pledger - LXD
- Glenette Alston - Manager
- Leslie Positeri - LXD
- Leslie Carlson – LXD
- Phillip Weiss - Manager
- Lauren Jauregui
- Christine Hearn – SME  
Deaf/Hearing-impaired Needs
- Christine McAvoy - LXD



# APPROACH



## Literature review

Section 508 references

Web and eLearning Accessibility websites

Storyline/ Articulate 360 accessibility support sites/pages

## Tool review

Articulate Storyline 360 Accessibility Features

Storyline Screen Readers

PDF Screen Readers

Speech to Text tools

## Brainstorming sessions

Asynchronous and synchronous sessions to do initial brainstorming then create working list of guidelines

## Creation of deliverables

Course Design Guidelines

Course Template w/best practices examples

## Report outs

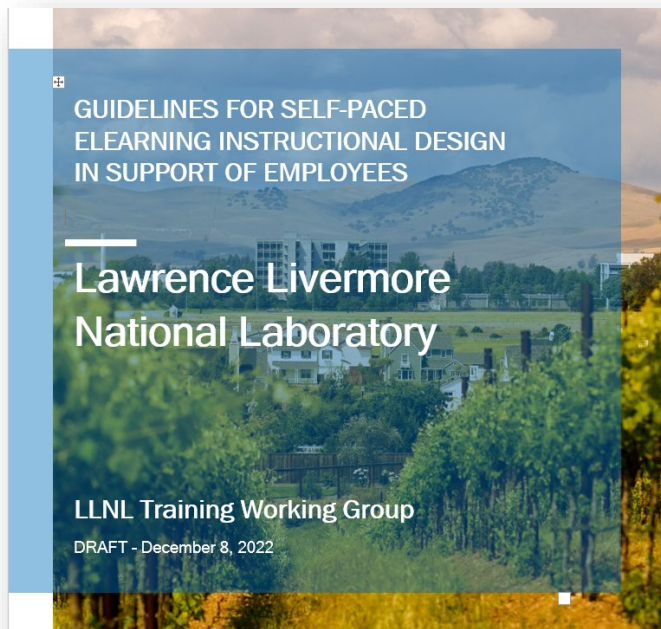
LLNL Training Working Group

LLNL Training Managers Group

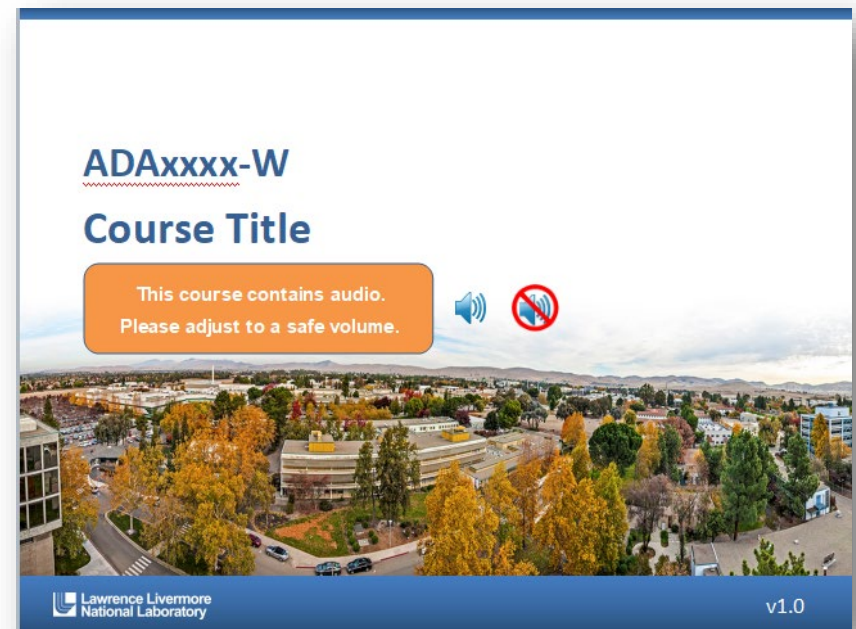
Recommendation	Made by	Can be reflected in an example template?
1. Recommendation		
2. The transcript should be consistently named "Course Transcript" and easily found. Consider including information on the intro page (or other consistent page as determined by the team) for transcript download.	Ronda Green	Yes
3. Use consistent naming convention for transcript in the Resource player button and/or changing the player label from "Notes" to "Course Transcript"	Phil Weiss	Yes
4. Provide option for learners to open or pin down the video.	Ronda Green	Yes
5. A106 Accessibility Controls Enabled (Use the built-in controls, such as the play/pause/reset buttons and the volume controller, visually display the volume controller)	Leslie Carlson	Yes
6. Don't use adaptive or automatically scrubbing slides, open layers, search new windows, etc. Let learners' controls when these events occur so they have time to read text, complete activities, and answer questions.	Leslie Carlson	Yes
7. Consider using full-screen transcripts on a slide that cover other transcripts (could use additional slides instead)	Phil Weiss	Yes
8. Provide closed captioning.	Leslie Carlson	Yes
9. Adjust screen element locations on slides to ensure that captioning does not cover screen elements	Phil Weiss	Yes
10. Provide text-based instructions for content that can only be understood by sound (example being alarms). Provide visual alternatives for audio-dependent content	Leslie Carlson	Yes
11. Don't add one-liners to activities unless the one-liner is essential to the functionality.	Leslie Carlson	Yes
12. Add a video of a sign-language interpreter that's synchronized with audio	Leslie Carlson	Yes
13. Add an extended description for a video. One way to accomplish this is to use triggers to temporarily pause the video at specific points and show a layer with audio and text descriptions about the video content. When the audio description is complete, hide the layer and resume the video.	Leslie Carlson	Yes
14. Don't use background audio when narration is playing. Or, give learners the option to mute background audio (e.g., a button that stops playing background audio).	Leslie Carlson	Yes
15. Provide instructions on how to navigate in the course (use lightbulb).	Leslie Carlson	Yes
16. PDF of transcript has consistent naming convention (e.g., ED0909-W Course Transcript)	Leslie Carlson	Yes
17. Links to other websites should open in a blank page	Leslie Carlson	Yes
18. Always allow user to rewind and go back freely to review previous slides or intra-slide transitions	Phil Weiss	Yes
19. Allow the user to reset the player (don't lock the player size)	Phil Weiss	Yes
20. Use the "Modern" player in A106, not the classic. The Modern player has more accessibility controls enabled than the classic player does	Phil Weiss	Yes
21. Use consistent design from one course to the next	Leslie Carlson	Yes
22. Enable the player full-screen toggle	Leslie Carlson	Yes
23. Allow learners to skip player navigation elements	Leslie Carlson	Yes
24. Label the "Previous" and "Next" buttons in the Modern player	Martha Low	Yes
25.		

# INITIAL DELIVERABLES

- Course Design Guidelines



- Example eLearning Template



# OUR JOURNEY NOW



## Review Draft Guidelines and Template

- Testing with SME
- Finalized Guidelines/Template



## Discuss Implementation Questions

- Increase in Costs
- Retroactivity



## Execute

- Communicate Developed Guidelines
- Establish Review Frequency
- Create guidelines for visually-impaired learners



# CONSIDERATIONS

## INCREASED LXD EFFORT – Hearing Impaired Considerations

### New courses:

- If transcripts = voiceover script, then little extra effort in creation of transcript
- Effort to edit transcript to match voiceover is approximately 3-5x course length. So, for a 1-hour course, assumes an additional 3-5 hours needed for editing transcripts

### Retrofit of existing courses:

- Would need to run through speech-to-text tool (limited non-cloud based) – approximately 1-2 hours effort
- Effort to edit transcript to match voiceover is approximately 3-5x course length. For 1 hour course, assumes an additional 3-5 hours needed for editing transcripts
- Requires courses to be cracked open, new template applied, edited, tested, QAd, uploaded again = another 2-3 hours of effort

# CONSIDERATIONS

## Tools

### Speech to Text:

- As using cloud-based services offer better options, a speech to text solution that is FEDRAMP approved is needed

### PDF Accessibility and Screen Readers:

- This is our next step for visually impaired learners
- Using Articulate Storyline 360 offers most of what is wanted for accessibility

# DISCUSSION

---

What is your experience with creating effective eLearning instruction for differently-abled learners?



# REFERENCES

5 Benefits of Using Closed Captions In Your Video Content	<a href="https://www.rev.com/blog/caption-blog/reasons-to-use-closed-caption-in-videos">https://www.rev.com/blog/caption-blog/reasons-to-use-closed-caption-in-videos</a>
Articulate Storyline Accessibility Index	<a href="https://articulate.com/support/article/accessibility-index">https://articulate.com/support/article/accessibility-index</a>
How Closed Captions Benefit More Than the Deaf and Hard of Hearing	<a href="https://www.rev.com/blog/caption-blog/how-captions-benefit-more-than-the-deaf-and-hard-of-hearing">https://www.rev.com/blog/caption-blog/how-captions-benefit-more-than-the-deaf-and-hard-of-hearing</a>
ICT Accessibility 508 Standards	<a href="https://www.access-board.gov/ict/">https://www.access-board.gov/ict/</a>
Storyline 360 Supports Section 508 Accessibility Guidelines	<a href="https://articulate.com/support/article/Storyline-360-Supports-Section-508-Accessibility-Guidelines#compliance">https://articulate.com/support/article/Storyline-360-Supports-Section-508-Accessibility-Guidelines#compliance</a>
The government's Section 508 transparency problem	<a href="https://federalnewsnetwork.com/reporters-notebook-jason-miller/2022/10/the-governments-section-508-transparency-problem/">https://federalnewsnetwork.com/reporters-notebook-jason-miller/2022/10/the-governments-section-508-transparency-problem/</a>
Text of Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794d)	<a href="https://www.access-board.gov/law/ra.html#section-508-federal-electronic-and-information-technology">https://www.access-board.gov/law/ra.html#section-508-federal-electronic-and-information-technology</a>
Why Captions Provide Equal Access (National Deaf Center Article)	<a href="https://nationaldeafcenter.org/resource-items/why-captions-provide-equal-access/">https://nationaldeafcenter.org/resource-items/why-captions-provide-equal-access/</a>

# SPEAKERS



Dr. Phillip Weiss is currently the Workforce Services and Development Manager for the Office of the Chief Financial Officer at Lawrence Livermore National Laboratory. Over his 35+ year career, he had led training and development organizations in non-profit, software, military, and government industries. In the area of virtual learning, he pioneered the use of software training using virtual workstations with WebEx and contributed to the development of the original WebEx Training Center. Dr. Weiss holds an MBA from the University of Maryland and a Doctorate of Business Administration from Walden University where he completed research on knowledge transfer preferences of expert employees nearing retirement. Dr. Weiss has spoken at multiple learning conferences including the Learning Guild's DevLearn and Learning Solutions conferences as well as Elliot Masie's Learning Consortium.



Mark Hagerty is currently an Instructional Designer for the Environment, Safety, and Health Directorate at the Lawrence Livermore National Laboratory. He is the training liaison for Biosafety and the Health Services Departments. Mark has over thirty years of experience creating training programs that improve worker performance across many industries, working as a trainer, writer, manager, instructional designer, and learning specialist. A lifelong fascination with behavioral and life sciences led Mark to earn a BS in psychology and biology and an MS in Organizational Behavior. A Master's certificate in Online Instructional Design unleashed his technical expertise to specialize in online learning. Outside of the laboratory, Mark founded Biomedical Writing Services, LLC to create continuing medical education courses, edit scientific documents, and prepare advanced, customized presentations and other visual communications as a freelance professional.