

Evaluation of LearnUpon LMS Course Presentation in a Corporate Environment

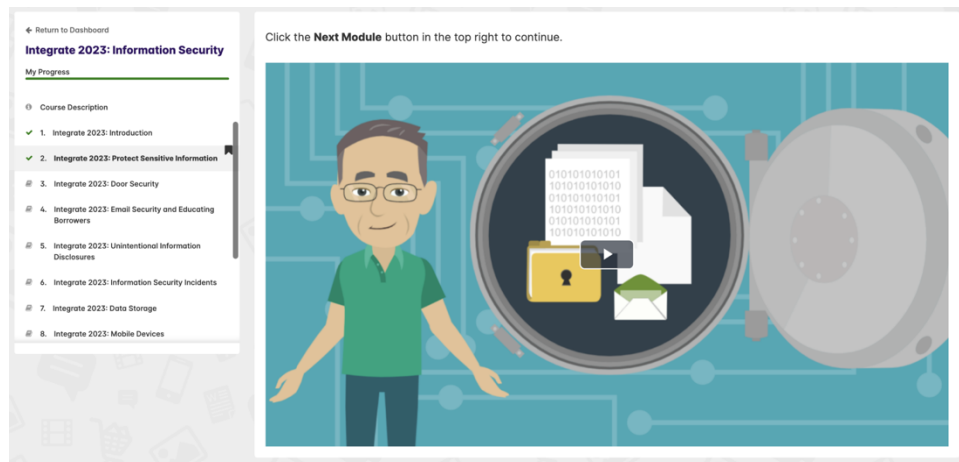
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ISLT 9455: Formative and Summative Evaluation

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Executive Summary

The goal of this evaluation is to collect and analyze data on employee attitudes towards the new Learning Management System of a medium-sized mortgage company (5,000-10,000 employees). To evaluate the new system, the evaluation will focus on one course, titled Information Security, that all employees must complete every year during the annual compliance course training. Because the content of this course and its quiz do not change much year-to-year, the evaluators are presented with an opportunity to directly study the presentation method of previous years (A SCORM files uploaded into the old LMS) to the new model (a natively built course in the new LMS, LearnUpon).

This mixed methods evaluation will consist of an analysis of employee-submitted help tickets, a survey of employee volunteers who have completed the course, observations of employees taking the course in LearnUpon, and an accessibility review conducted by an accessibility expert. The outcomes of this evaluation may influence stakeholders' decisions on how to roll out courses in the future. These stakeholders consist of the LMS admin, compliance department, the learning experience design team, and director of People Services.

Introduction

This evaluation, conducted over about 2 months by Kristin DeLeon and Ritesh Sharma, aims to evaluate employee reaction to the new LMS system, LearnUpon. Specifically, the feature allowing courses to be natively built into the system, rather than uploading a SCORM file into the LMS, will be the focus. Using surveys, observations, analysis of employee-submitted tickets, and accessibility expert review, and test scores we hope to create a comprehensive understanding of employee attitudes, the pedagogical effectiveness, user experience, and usability of the new course presentation.

The formative portion of the evaluation will look at the course built natively in LearnUpon in terms of usability, learner experience and pedagogy. This will include a look at graphical elements, accessibility, and over user interface and how it lends itself to the content. The stakeholders consist of the LMS admin, compliance department, the learning experience design team, and director of People Services. These individuals will be interested in the outcome of the evaluation, as it may inform them on several decisions regarding online training. An example of one of these decisions may be whether to use this presentation method for future training. The main client, the LMS administrator, is hoping to use the data to also work with the LearnUpon vendor to discuss possible new features or improvements to the tool.

Background

In 2022, the company switched to a new Learning Management System (LMS) called LearnUpon. One of the appealing features of this new system was the capability of building courses natively in the LMS rather than solely relying on the creation of SCORM files in separate software and importing those into the system. Courses built natively allowed for a more seamless user interface and more robust reporting options, while reducing the possibility of issues caused by any corruption in the SCORM file. It has also been determined that building the courses into the LMS directly cuts the amount of time it takes to create and edit the natively built courses. These courses usually consist of short video segments followed by knowledge checks and/or quizzes.

User experience is a priority for the eLearning development team. While LearnUpon has an extensive list of capabilities, stakeholders want to ensure this new method is both easy to use and well received by employees. To pilot this method, the team used this launch method via an information security course that was distributed to all employees during the annual compliance

course launch. This course consists of 11 short video modules, followed by a 10-question quiz. Users have 3 attempts to earn a score of 80% or higher and may go back and freely rewatch any of the videos at any time. If the user chooses, they may attempt to “test out” of the content by using one of their quiz attempts before watching the content.

The ideal lifespan of this method of course development is at least until the renewal of the contract that the company has with the LearnUpon vendor. The current contract is for around two years, so this method has the potential to last a while if it proves viable. Potential challenges in evaluating the technology may arise, particularly in ensuring a participant pool that is representative of the company. This company has several different departments, and learner profiles can differ from one to another. Because many aspects of the evaluation will depend on employees who volunteer to participate, there is a risk that data may not reflect all employees' attitudes. One way this evaluation hopes to prevent this is by also using post-test data that all employees will take as part of the course and using employee feedback via help-desk tickets they have submitted regarding the course.

Formative Evaluation Plan

Purpose

The purpose of the formative evaluation is to assess the course built natively in LearnUpon in terms of usability, learner experience and pedagogy. While the aim is to evaluate the technology on its own, the purpose is also to determine if this new method of course delivery and development could replace the use of imported SCORM files in the future for courses consisting of just videos and quizzes. Three main priorities of the formative evaluation are:

- To determine employee reactions to the new course interface and presentation method;

- To identify improvements to both course presentation method and course construction;
- To identify areas of improvement for usability and understanding of content; and
- To judge how the course presentation method interacts with the pedagogy of course content.

Because the overall purpose of the formative evaluation is to provide information to improve the course presentation and design, specific aspects will be the focus of this evaluation. These include:

- Graphical elements of the user interface;
- Graphical elements of the course content;
- Interface accessibility;
- Interface usability;
- Course navigation; and
- Content presentation.

Depending on the suggested improvements that result from the formative evaluation, two main outcomes can be expected. For critical improvements or small improvements that could be accomplished in a short time period to the current course, the 2023 version of the course may be updated to reflect recommendations. For most of the recommendations made, the predicted outcome is that these improvements will be reviewed and possibly implemented for the 2024 compliance launch.

Stakeholders

There are several stakeholders who are interested in and/or will be impacted by the result of this formative evaluation. The primary audience are the 5000-10,000 employees who take this Information Security course on an annual basis. All employees are legally required to complete

this course every year, with a score of 80% or higher. These employees cover a range of departments including loan officers, customer service representatives, information technology employees, and human resources employees. All employees possess basic computer and reading comprehension skills, though they have a variety of levels of education completed and role-specific skills.

The secondary audience consists of individuals on the Learning Experience Design team (the people who design the courses), the Learning Management System Administrator (who deploys courses and monitors course completion data), and the Compliance department (who determines the content of the courses). These individuals are the stakeholders that are the most interested in the evaluation results because it will inform their future processes in course delivery, as well as help them improve the course further.

Decisions

The goal of the formative evaluation is to provide several suggestions for improvement, as well as to highlight current strengths of the course's design and usability. Therefore, decisions that result of the evaluation will mostly consist of decisions in the design and presentation of the course, alongside the delivery method. The results may reveal ways that users find the layout of information or course navigation confusing, which would result in possible changes to the course itself and in future courses. Anticipated decisions as a result of this evaluation include:

- Implementation procedures natively built courses in LearnUpon;
- Interface design of future courses in LearnUpon;
- Content presentation decision of company online training; and
- Whether or not to direct team focus to developing courses natively in LearnUpon, or to continue to rely on SCORM files only.

Questions for Formative Plan

To inform the possible decisions laid out above, the summative evaluation will aim to answer the following questions:

1. What are the strengths and weaknesses of the user interface and graphical elements of the course?
2. Is the course in LearnUpon easy to navigate for the learner?
3. How effective is the course presentation method in facilitating learner comprehension and retention of information?
4. Are there any barriers to accessibility for learners?
5. What improvements should be made to the interface design of future courses in LearnUpon?
6. How do employees react to the new course interface and presentation method

Participant Sample

The participants for this evaluation will consist of employee volunteers spanning several different departments. The employees range from entry-level positions to leadership positions, and the ages range from 22 to 50 years old. These participants will be observed and will be asked to fill out a survey. An expert review will be conducted by a digital accessibility expert who also works for the company.

The sample size can only consist of those who volunteer, so there is no direct control over volunteer selection to help control the demographics of the sample. However, because the sample of 30 to 40 employees all have different roles and experience in the company, it is still representative of the company. It was decided to pull volunteers from several different departments to increase the likelihood of creating a representative sample. In order to

realistically complete the formative evaluation in time, a smaller sample size is also due to time constraints.

Method

This formative evaluation will focus on a mixed methods approach to collect data regarding learner attitudes toward the technology and improvements that could be made to the course's design and implementation. This mixed methods approach will allow for triangulation of the findings to create a comprehensive picture of these aspects.

An expert on digital accessibility, who currently works at the same company, will conduct an expert review of the course in LearnUpon. They will be asked to note any potential flaws or improvements that could be made to the course itself and its construction/design in the LMS to improve user experience. Not only will they be able to note potential problems for users who need specific accommodation, but also how to generally improve the learning experience for all employees. This data will be analyzed by coding the open-ended responses and noting suggestions for improvement, and common themes and how to connect to other data collected in the evaluation.

Currently, the LMS administrator responds to and collects employee-submitted help tickets when employees encounter a problem or have a question regarding the course. The LMS admin permits us access to these tickets to conduct a frequency count and coding of open-ended responses analysis on the learner responses. All names or personally identifying data have been removed from the ticket data, so demographics cannot be collected as part of the data for this method. Instead, we have a database of categorized questions, suggestions, and user complaints in a list format. The hope is to use this data alongside data collected through other methods to

determine trends. Frequency counts of certain issues and complaints will be used to analyze this data.

A survey consisting of 12 questions will be presented to 30 to 40 employee volunteers who have completed the Information Security course in LearnUpon. The formative questions will consist of both fixed-answer questions and open-ended questions that focus on the design and implementation of the course in the new LMS. The questions with fixed-responses will be Likert-style questions, where participants will be asked to rank their answer on a scale of Strongly Agree, Agree, Neither Agree or Disagree, Disagree, and Strongly Disagree. This quantitative data will be analyzed using central tendency, using the mean, medium, and mode to get an idea of general thoughts and attitudes regarding the software. The open-ended questions will only consist of three at the end, and the data will be analyzed via frequency counts and coding of the open-ended responses.

Finally, observations will be conducted to collect data on course usability. 5 to 8 employees will be observed taking the course in the LearnUpon system. The goal is to observe how easy the course is to navigate and to see any potential barriers employees may experience. Because a lot of this information is a cognitive process for the learner and not always able to be seen, the observations will be think-aloud observations. The participants will be asked to dictate their thoughts aloud as they use the technology, while detailed notes are taken over their actions in the software and what they saw aloud. Frequency counts and coding of participant comments will be used to analyze the collected data.

Evaluation Question	Evaluation Method	Data Collection Instrument/Method	Data Analysis Method
What are the strengths and weaknesses of the user interface and graphical elements of the course?	Qualitative Quantitative	Observation Survey Ticket Review	<ul style="list-style-type: none"> • Frequency Counts • Coding of Open-Ended Responses • Central Tendency
Is the course in LearnUpon easy to navigate for the learner?	Qualitative Quantitative	Observation Survey Ticket Review Expert Review	<ul style="list-style-type: none"> • Frequency Counts • Coding of Open-Ended Responses • Central Tendency
Are there any barriers to accessibility for learners?	Qualitative Quantitative	Observation Survey Ticket Review Expert Review	<ul style="list-style-type: none"> • Frequency Counts • Coding of Open-Ended Responses • Central Tendency
What improvements should be made to the interface design of future courses in Learn Upon?	Qualitative Quantitative	Observation Survey	<ul style="list-style-type: none"> • Frequency Counts • Coding of Open-Ended Responses • Central Tendency
How do employees react to the new course interface and presentation method?	Qualitative Quantitative	Observation Survey Ticket Review	<ul style="list-style-type: none"> • Frequency Counts • Coding of Open-Ended Responses • Central Tendency
How does the design and implementation of course materials in LearnUpon lend itself to the pedagogical effectiveness of the course?	Qualitative Quantitative	Observation Survey	<ul style="list-style-type: none"> • Frequency Counts • Coding of Open-Ended Responses • Central Tendency

Logistics

Both Kristin DeLeon and Ritesh Sharma will be conducting this formative evaluation. Kristin DeLeon will conduct all employee observations and will collect data from the employee submitted tickets and will be the primary evaluator of that data. Both Kristin and Ritesh will develop the survey instrument used to collect the survey data. Ritesh will be the primary evaluator for the expert review and survey data. While all collected data will be reviewed by all members, the primary person on each set of data will be the main person responsible for organizing the collected data.

Timelines

Date	Task	Group Member
March 3rd	Client Interview	Kristin DeLeon Ritesh Sharma
March 27 – April 14th	Observations Conducted	Kristin DeLeon
April 3rd – April 7th	Survey Distributed	Kristin DeLeon Ritesh Sharma
April 3 rd – 7th	Expert Review	
April 3rd	Help Ticket Data Analysis Begins	Kristin DeLeon
April 10th	Expert Review Data Analysis Begins	Ritesh Sharma
April 10th	Survey Data Analysis Begins	Ritesh Sharma
April 14th	Observation Data Analysis Begins	Kristin DeLeon
May 11th	Results Reported	Kristin DeLeon Ritesh Sharma

Budget for Formative Plan

For this evaluation, time is the major cost factor. While employees will have to complete the course as part of their usual annual compliance courses, the employees who are being observed will have to take this course slower than they normally would. This course normally takes around 10 minutes to complete, so it is estimated it will take at least 20 minutes to

complete during a “think-aloud” observation. The employees who complete the survey will also have to use their time to complete this task, which is estimated to take around 5 minutes. As all employees are on different pay structures and scale, it is difficult to determine a specific dollar amount for the budget regarding participants. The final cost consideration is the time it will take for the accessibility expert to complete their review, which could take at least 1 to 2 hours.

Estimated Budget:

<u>Service</u>	<u>Time to Complete</u>	<u>Amount</u>
Expert Review (\$35/hr)	2 Hours	\$70.00
Observation (\$30/hr)	2 Hours	\$60.00
Ticket Analysis (\$30/hr)	2 Hours	\$60.00
Survey Construction and Analysis (\$30/hr)	3 Hours	\$90.00
Compilation of Results and Report Preparation (\$60/hr)	4 Hours	\$240.00
Client Interview (\$60/hr)	1 Hour	\$60.00
	<u>Total:</u>	\$580.00

Formative Evaluation Report

Executive Summary

The purpose of this formative evaluation was to assess the Information Security compliance course that was built natively in LearnUpon in terms of usability, learner experience and pedagogy. While the aim is to evaluate the technology on its own, the purpose is also to determine if this new method of course delivery and development could replace the use of imported SCORM files in the future for courses consisting of just videos and quizzes.

The evaluators collected data from several sources to assess the course to answer a series of evaluation questions regarding the graphical elements, interface, navigation, and effectiveness of the course. This evaluation included a survey completed by 9 participants, observation of 5 employees, a review of 22 help tickets sent to the LMS helpdesk, and an accessibility expert

review. Data collected showed that the graphical elements and interface of the course were mostly well-received overall. However, participants did report weaknesses in the design and interface. These included difficulties in distinguishing what parts of the course were required, as well as confusion regarding the acknowledgement section before the quiz. Navigation of the course was also a concern for some, with learners sometimes confused about how to proceed within the course.

Suggestions include removing confusing pop-ups and wording regarding the acknowledgement section and making the required checkbox more prominent. To help alleviate navigation frustrations, finding a way to increase the size of or the location of the “Next Module” button may help. Finally, the accessibility expert provided the accessibility review presented suggested changes to make the course more accessible to all learners, such as the inclusion of alternative text and descriptive captioning.

Evaluation Questions

The summative evaluation aims to answer the following questions:

- What are the strengths and weaknesses of the user interface and graphical elements of the course?
- Is the course in LearnUpon easy to navigate for the learner?
- How effective is the course presentation method in facilitating learner comprehension and retention of information?
- Are there any barriers to accessibility for learners?
- What improvements should be made to the interface design of future courses in LearnUpon?
- How do employees react to the new course interface and presentation method?

Results

Data for this formative evaluation was collected through several different methods. 20 participants who had recently completed the Information Security course were asked to complete a survey regarding their experiences. Of these 20 employees, 9 completed the survey. Most respondents (77.78%) were between the ages of 25-34, with the rest of the respondents (22.22%) were between the ages of 35-44. The respondents were all from different departments in the company, including IT (Information Technology), Human Resources, Product Strategy, and others. 44.44% of respondents have worked at the company for 2-4 years, 33.33% have worked at the company 6-9 years, and the remainder have worked at the company for either less than 2 years or from 4-6 years.

Observations were conducted to watch employees use the software and complete the course. 5 employees from several departments and ranging from ages 26-38 were observed. The observer did not assist or direct the participants in what to do but did invite them to make comments regarding their thoughts or attitudes aloud. These comments were noted, along with any notable behavior observed.

To collect data on problems employees encountered, a review of help tickets sent to the LMS helpdesk was conducted. Only 22 tickets were submitted from a population of around 5,000 employees. For this review, employee personal data was excluded and only their messages were analyzed. However, the LMS admin acknowledged that these tickets came from a variety of employees who work in several different departments throughout the company. All tickets were read and categorized based on a theme or specific issue. An overview of the results can be found in Figure 1.

Problem Encountered	Number of Tickets
Unsure about Due Date or Course Requirement	3
Missed the Acknowledgement Checkbox	6
General Course Navigation	7
Computer/Technical Issues	4
Other	2
Total	22

Figure 1. Help-Ticket Data

Finally, an Accessibility Review was conducted by an expert who worked for the same company. The reviewer analyzed the Information Security course and presented a report of their findings, including suggested changes to make the course more accessible. Elements such as alt-text, keyboard-only access, captioning, and other elements were analyzed by the expert. The full report can be found in Appendix B.

The results of this evaluation will be reported and discussed in a series of sub-sections that will aim to answer each of the above evaluation questions. In the sub-section, the question is restated, and a general answer is given. Next, the appropriate results and data will follow to support the answer provided.

1. What are the strengths and weaknesses of the user interface and graphical elements of the course?

The participants' reaction to the interface and graphical elements of the course were overall positive and well-received. Analysis of the survey data showed that 77.78% of survey respondents strongly agreed and 22.22% agreed that the graphical elements of the interface and the course were easy to understand and navigate according to the respondents.

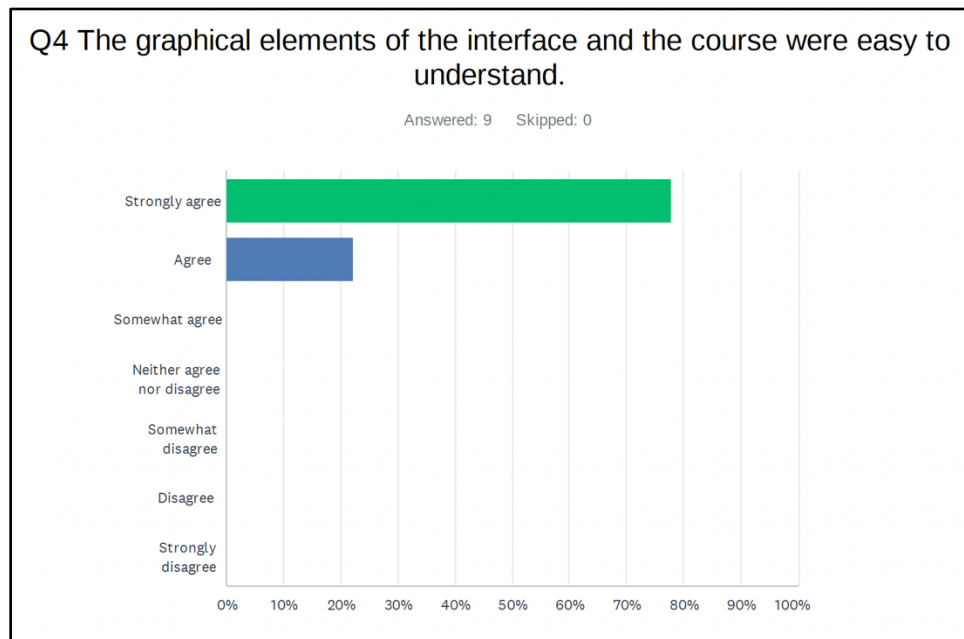


Figure 2. Survey results regarding graphical elements

These results were echoed in the observation, where several of the observed employees remarked that they liked the design and appearance of the LMS and course. They all appreciated the minimalistic and streamlined design of the course.

While the graphical elements and interface were mostly well received, participants did have some comments regarding weaknesses in the design. One problem that appeared in both observation and the survey was that some users struggled to distinguish what parts of the course were and were not required sections. Learners can skip the content and attempt the quiz right away, since this is an annual training with similar content every year. The only required sections are the quiz (which they must pass with a score of 80%) and an “Acknowledgment” check box on the slide before the quiz, where they must acknowledge that they will be required to take a live training if they do not pass after 3 attempts. Currently on the menu, these do have a label of “required,” but several participants noted that because of the small text it is easy to miss this information.

The Acknowledgement section mentioned above was another source of frustration for some participants. The survey, observations, and help-tickets all contained responses regarding this required checkbox. When the user checks this box, a pop up appears asking the user if they are sure they wish to “submit this survey.” The use of the word “survey” here is because this section was designed using LearnUpon’s surveying tool. However, this caused some confusion amongst the learners. 27.3% of help-tickets were instances of the learner not realizing they needed to check the acknowledgement box before the course would be considered “complete.” Both observation and survey participants made mentions that the acknowledgement confused them, with one survey response saying: “The acknowledgement “survey” confused me a little bit. Is there a way to remove the word ‘survey’?” The interface and wording around this section was not optimal and should be presented differently in the future.

2. Is the course in LearnUpon easy to navigate for the learner?

The new LearnUpon interface did have a slight learning curve for employees. Problems and confusion regarding navigation made up 31.82% of the submitting help-tickets, which was the largest percentage of problems submitted. Observation participants reflected these issues and provided more insight with their comments. One common complaint was that the “Next Module” button was not as obvious as they anticipated. The button is in the top right corner of the course screen but not right next to the video content. During observation, the learners did not experience much issue once they located this button, but it did cause initial confusion.

The other issue encountered in relation to navigation was in the acknowledgement section. Many complaints regarding this were similar to those found in the previous section of this report. When the user checks this box, a pop up appears asking the user if they are sure they wish to

“submit this survey.” This confused some learners when navigating the course, as they seemed unsure if this is something that they are required to complete.

77.78% of survey participants strongly agreed that the course was easy to navigate, while 22.22% agreed. Reception amongst survey participants of the course navigation was positive, with some participants echoing similar feedback found in the observations and help tickets.

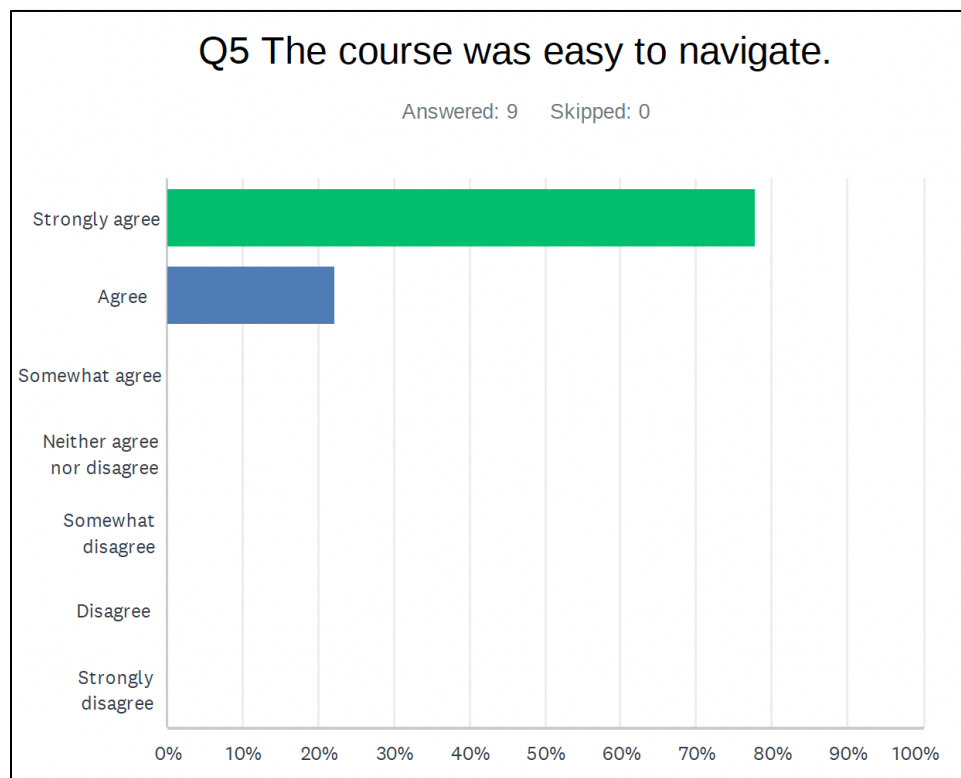


Figure 3. Course Navigation Survey Results

3. How effective is the course presentation method in facilitating learner comprehension and retention of information?

The course content was presented in a clear and organized manner and the respondents felt confident in their ability to apply the course material to their job responsibility. 66.67% of participants strongly agreed and 33.33% agreed that the course content was presented in an effective way. There was an even higher percentage of 77.78% of respondents that strongly

agreed they felt confident in their ability to apply the course material to their jobs, with 22.22% agreeing.

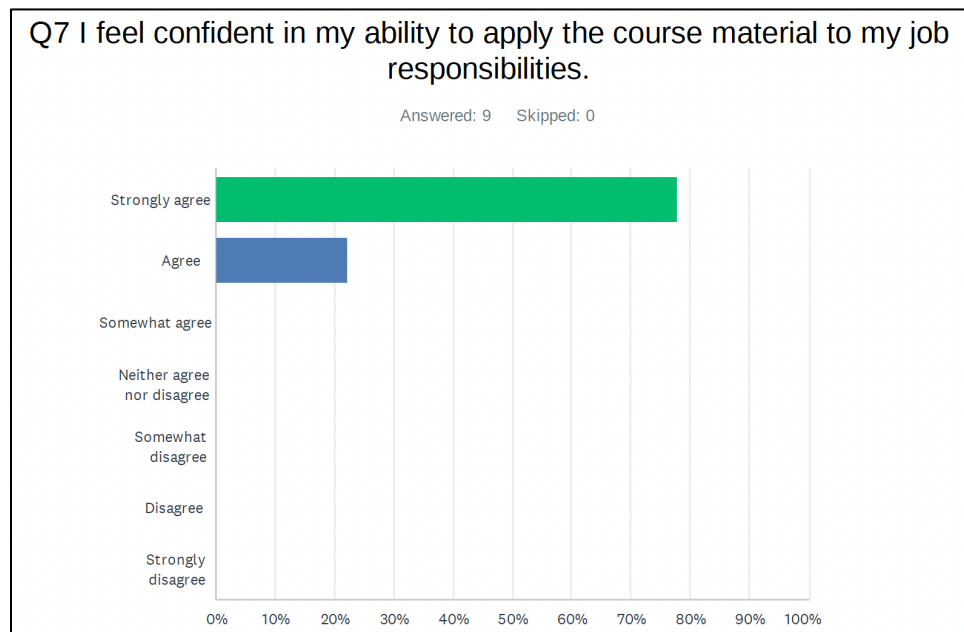


Figure 4. Responses to Confidence in Applying Course Material to Job Function

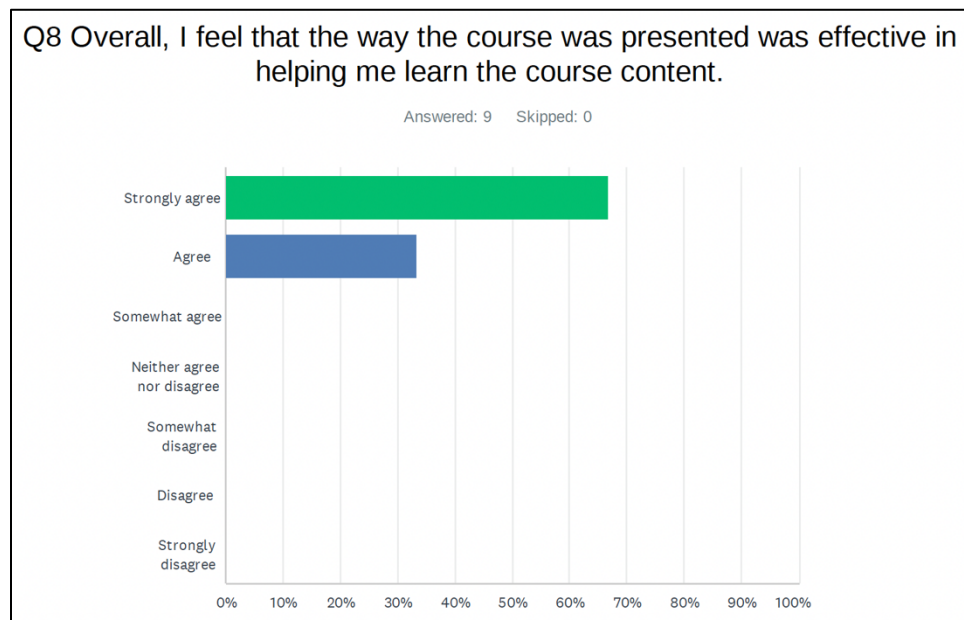


Figure 5. Participant Responses Regarding Clarity of Course Presentation

Observation participants also felt the content was presented clearly, with all 5 participants passing the course quiz on their first attempt. One participant noted that because there were many videos to watch before the quiz, it can be difficult to recall all the information the quiz requires.

One aspect of the course that received praise from both survey and observation participants was the quiz results screen. In previous years, the learner would receive automatic feedback every time they answered a question notifying them if they got the question correct or incorrect. With LearnUpon, this is not currently possible, and several participants pointed out that this surprised them and caused some uneasiness. However, participants did respond that they all enjoyed the Quiz Results page that automatically followed the quiz. This page gives their attempt number, score, and lists all the questions with the answers (the answer the learner chose is highlighted). Learners reported this allowed them to easily review the information they were quizzed over and gave them time to review questions they answered incorrectly.

4. Are there any barriers to accessibility for learners?

In terms of accessibility for all learners, most survey respondents felt the course was accessible, with closed captioning and video speed options cited as helpful. Many pointed out that the playback options and captions as elements that would benefit different learners.

The accessibility review conducted by an Accessibility Expert identified several issues that need to be addressed to ensure compliance with accessibility standards. Many of the issues relate to needing more adequate alternative text, descriptions, and captions for non-text components of the course content, as well as the need for better keyboard navigation and distinguishable interactive elements.

WHAT'S WRONG? OR WHAT'S MISSING?	CAN IT BE FIXED?	HOW?	NOTES
Alt-Text (alternative text)	Yes	The addition of clear explanation of individual images that appear as a thumbnail, or video still in the course.	Missing on every single module's video thumbnails – no text space currently exists to add test descriptions to video thumbnails.
Non-text content explanations for everything that is viewable (this includes background color changes and template/background setting descriptions)	Yes	Creating a simple description of the video in line with the playback images	Missing on each video and needed for non-visual learners to understand what is in the video as well as what is said.
Keyboard-only access hindered	Maybe, eventually	Source code on the back end needs to include alternatives for drop-down menus and scrolling options	Discussion with LMS programmers and product development on the roadmap for meeting this guideline

Figure 6. Sample from Accessibility Report (see Appendix B For full report)

While some of the issues can be fixed through manual processes, such as adding descriptions and captions to video content, others require implementing new features in the LMS software, such as an accessibility checker and reliable caption-producing software. The LMS administrator will need to work with the developers and product team to prioritize and address these issues to improve accessibility for all learners.

5. *What improvements should be made to the interface design of future courses in LearnUpon?*

There are a number of improvements that could be made to the interface design of future courses in LearnUpon. Suggestions for improvement from survey participants include making required sections on the menu more obvious, increasing the size of the “next module” button, and removing confusing language around “submit survey” on the Acknowledgment page. The importance of these improvements is supported by both observation and help-tickets data, where users expressed concern with these elements. A more detailed list of suggested improvements, including those connected to accessibility, can be found in the “Recommendations” section of this report.

6. How do employees react to the new course interface and presentation method?

When asked about the course experience, most respondents were satisfied, with many giving feedback on the course's organization, presentation, and effectiveness. Learners felt the course was very streamlined and pleasant to look at. An element of the course presentation that came up in the survey results and observations was the fact that courses no longer opened a new window, as in years past. Previously, the learner would click “Launch Course” and the course would open on a new screen. Pop-up blockers would sometime interfere with instruction because of this, or the user would accidentally click out of the course too soon. The fact that the course opened in the same window was very well received. One survey participant noted: “I think it was an improvement when compared to the previous "pop-up window" style courses since the whole window didn't need to refresh in between each chapter or item completed.”

Elements that received some criticisms were the lack of feedback for each question as soon as the answer was submitted, and confusion over the Acknowledgement section. While learners were shown which questions they answered correctly and incorrectly, some mild anxiety was observed from participants when they could not tell how well they were doing during the quiz. As covered earlier, the new Acknowledgement section of the course caused navigational frustration for some learners.

Recommendations

Suggestions for graphical and interface improvement include:

- Make required sections on the menu more obvious, such as using a distinct color or bolding the font for the required sections on the menu;
- Increase the size of the “Next Module” button, or moving the button in closer proximity to the video content;

- Remove confusing language (“submit survey”) on the Acknowledgment page. If this is not a feature, the LMS Admin will need to work with the LearnUpon vendor to discuss the possibility of either customizing the content of or removing the pop-up window;
- Increase the size of the Acknowledgement checkbox and/or making this checkbox more prominent;
- Consider working with the LearnUpon vendor to implement feedback for each answered question.

There are also several suggestions to make this course more accessible to learners. Most of these suggestions were provided by the Accessibility Expert and are all listed in detail in their report (Appendix B). A high-level overview of these suggestions include:

- Add alternative text for individual images;
- Add descriptions to the captions of all video content;
- Utilize a tool such as an accessibility checker and reliable caption-producing software;
- Include a downloadable script for the course;
- Distinguish interactive elements from non-interactive elements;
- Add a “Help” or “Questions” button with information that may be misunderstood, or to report technical difficulties;
- Include descriptive and visual links;
- Add a “go-back” button that would take users back to the Home Page;
- Ensure background and foreground colors have sufficient contrast ratio.

Limitations

While the evaluators strived for accuracy, reliability, and validity during these evaluations, certain limitations and potential threats were still present and/or unavoidable. A

major limitation to this study was the time constraints and timeline of data collection. Because most employees took this training in February 2023, and the tools for gathering data were not designed until early March 2023. Therefore, the evaluators had to rely on individuals new to the company or those who waited until later to take the course to get their immediate feedback on the course for the observation and survey portions. This potentially affected the types of feedback received.

Time constraints for the evaluation also limited the data collection methods. While the evaluators would have liked to include focus groups and/or one-on-one interviews, the limited amount of time available and the heavy workload of employees in the spring did not permit these methods. There were also potential threats to an unbiased interpretation of the data because one of the evaluators is on the team that developed the compliance courses. While the evaluator did not create this specific Information Security course, they had a role in the implementation of the new course delivery method. However, they did not have a role in the selection of the LearnUpon LMS.

Summary

This evaluation utilized employee surveys, observations, help-tickets, and an expert review to assess the Information Security compliance course in terms of usability, learner experience and pedagogy. The results of the formative evaluation showed that the Information Security course was generally well-received by the participants. The course's graphical elements and interface were well-liked by most respondents, with most finding them visually pleasing and easy to understand. However, some participants did encounter issues with the course's design, particularly regarding identifying required sections and completing the Acknowledgement section. The new LearnUpon interface also had a slight learning curve for some employees, with

navigation problems being the most reported issue. The expert review concluded that several changes could be made to the course to make it more accessible to users. Overall, the course built natively in LearnUpon could be considered successful based upon the data gathered. With improvements to a few minor graphical and accessibility elements, this method of delivery could be considered for future courses.

Lessons Learned

Throughout the evaluation planning and implementation process, the evaluators learned how to effectively conduct a thorough evaluation. Though the evaluation was successful, there were elements that could be improved:

- If there had been more time, the evaluators would have liked to implement one-on-one and/or focus groups to gather more data on user experience. While the survey and observations provided some data on this, an interview session would allow users to expand on their thoughts and provide more suggestions for improvements.
- Because of the timeline of the course and time constraints, the evaluators missed the most opportune time for data collection using the survey and observation. Most employees in the company had already taken the course before the collection tools had been developed. Therefore, those who were observed or completed the survey were new employees or those who had waited to complete their courses. This means data was not collected on those who completed their courses right away. However, the help-ticket data did provide some information on those groups.
- Due to the issue above, a smaller sample of participants was available to take the survey. Since it is known that not all who are provided with a survey would complete it, it meant a smaller sample of data than was desired. If the evaluators would have been able to

distribute the survey to more individuals, different data may have resulted. This data would have been a more accurate representation of the user experience.

Appendices

Appendix A: Observation Notes

Participant 1		
User Profile	Age / Gender	Age 29/Male
	Internet Experience	Very Experienced
	Profession	Diversity & Inclusion Specialist
Test Context	Usability Test Method	Observation of course completion
	Date of Test	04/05/2023
	Platform / Browser	Windows PC/Google Chrome

Summary of Observations

	Task 1	Task 2	Task 3
Task Description	Viewing Video Content	Completing Quiz	General Navigation
Time spent to complete the task(s)	8 minutes	4 minutes	< 1 minute
*Difficulty rating in completing task	1	1	1
Errors or problems identified by a user	At first did not see the “Next Module” button. After finding it the first time was able to locate it quickly.	No problems identified. User passed quiz on first attempt.	Hesitated on the “acknowledgement” section, but completed it corrected.
Overall user comments (likes and dislikes)	“The interface is really clean.” “The content is easy to understand.”	“The text on the quiz section seems small.” “This page also looks really clean”	“It took me a minute at first to understand how to navigate, but after that it was easy to get around the course.”

*Difficulty rating: 1 = easy, 2 = okay, 3 = difficult

Participant 2		
User Profile	Age / Gender	32/Male
	Internet Experience	Very Experienced
	Profession	IT Specialist
Test Context	Usability Test Method	Observation of course completion
	Date of Test	04/10/2023
	Platform / Browser	Windows PC/Google Chrome

Summary of Observations

	Task 1	Task 2	Task 3
Task Description	Viewing Video Content	Completing Quiz	General Navigation
Time spent to complete the task(s)	5 minutes	3 minutes	< 1 minute
*Difficulty rating in completing task	1	1	2
Errors or problems identified by a user	No problems identified	No problems identified. User passed on first attempt	Confused by the wording on the “acknowledgement” screen
Overall user comments (likes and dislikes)	<p>“I like the captions on the videos.”</p> <p>“I like that the course isn’t in a pop out window like it was in years past.”</p>	<p>“I do miss finding out if I got a question wrong or right as I answered them (like they were in years past).”</p> <p>“I really like the quiz summary screen at the end. It’s easy for me to review my answers”</p>	<p>“I’m confused because it’s referring to the acknowledgement as a ‘survey,’ and it’s not a survey. It’s not too big of a deal because I can figure it out, but it threw me off.”</p> <p>“Most of the page is very streamline”</p>

*Difficulty rating: 1 = easy, 2 = okay, 3 = difficult

Participant 3		
User Profile	Age / Gender	34/Female
	Internet Experience	Experienced
	Profession	HR (Human Resources) Specialist
Test Context	Usability Test Method	Observation of course completion
	Date of Test	04/05/2023
	Platform / Browser	Mac OS/Google Chrome

Summary of Observations

	Task 1	Task 2	Task 3
Task Description	Viewing Video Content	Completing Quiz	General Navigation
Time spent to complete the task(s)	6 minutes	4 minutes	< 1 minute
*Difficulty rating in completing task	1	2	1
Errors or problems identified by a user	Did not use the “Next Module” button, instead used the menu for navigation. Not an error, but also not exactly as intended.	Seem to experience some difficulty deciding on correct answers.	None identified.
Overall user comments (likes and dislikes)	<p>“The videos are easy to understand.”</p> <p>“It’s nice that the videos appear on the same page as everything else. It’s harder to get lost.”</p>	<p>“The quiz section seems the most different than it used to be. I like it, though. It’s very pleasing to look at.”</p> <p>“There were a lot of videos, and it makes it a little hard to recall the information during the quiz.”</p>	<p>“I wish the required parts would be a little more obvious. Maybe making the required parts on the menu bold or red?”</p> <p>“I like the look of this more than last year’s version.”</p>

*Difficulty rating: 1 = easy, 2 = okay, 3 = difficult

Participant 4		
User Profile	Age / Gender	26/Female
	Internet Experience	Experienced
	Profession	Loan Specialist
Test Context	Usability Test Method	Observation of course completion
	Date of Test	04/06/2023
	Platform / Browser	Windows PC/Google Chrome

Summary of Observations

	Task 1	Task 2	Task 3
Task Description	Viewing Video Content	Completing Quiz	General Navigation
Time spent to complete the task(s)	7 minutes	3 minutes	2 minutes
*Difficulty rating in completing task	1	1	2
Errors or problems identified by a user	Used a combination of menu navigation and “Next Module” button	No problems encountered. Passed exam on first attempt.	Missed Acknowledgement, had to go back to complete
Overall user comments (likes and dislikes)	“Everything looks very clean”	“I like that the results page is easy to review, and it has a lot of information on it”	“The acknowledgement part was confusing. I didn’t know what that was.”

*Difficulty rating: 1 = easy, 2 = okay, 3 = difficult

Participant 5		
User Profile	Age / Gender	38/Male
	Internet Experience	Very Experienced
	Profession	Technology
Test Context	Usability Test Method	Observation of course completion
	Date of Test	04/11/2023
	Platform / Browser	Windows PC/Google Chrome

Summary of Observations

	Task 1	Task 2	Task 3
Task Description	Viewing Video Content	Completing Quiz	General Navigation
Time spent to complete the task(s)	6 minutes	3 minutes	
*Difficulty rating in completing task	1	1	1
Errors or problems identified by a user	No errors encountered	User felt text was small	Confusion on the word “survey” in the acknowledgement
Overall user comments (likes and dislikes)	<p>“The interface is really simple and easy for me to understand.”</p> <p>“I like that the course isn’t in a pop-out window like before.”</p> <p>“The content looks like it's been updated since last year.”</p>	<p>“I’m going to have to zoom in on my browser, the text seems smaller on the quiz than the rest of the course.”</p>	<p>“Calling the acknowledgement, a ‘survey’ is strange, I feel like that might confuse people”</p> <p>“I like that I can navigate using the menu or the ‘next’ button”</p>

*Difficulty rating: 1 = easy, 2 = okay, 3 = difficult

Appendix B: Accessibility Report

ACCESSIBILITY REPORT

ACCESSIBILITY SUMMARY

Most of the accessibility issues that were found are related to items missing from both source code input and needing the addition of user-friendly output for screen readers, auditory-only, and test-only learners. Since the LMS is new to our team, we do not have access to proprietary source code material for all SCORM files that we upload as well as video file attachments that are saved on LearnUpon servers.

WEBSITE (URL) ISSUES' OVERVIEW

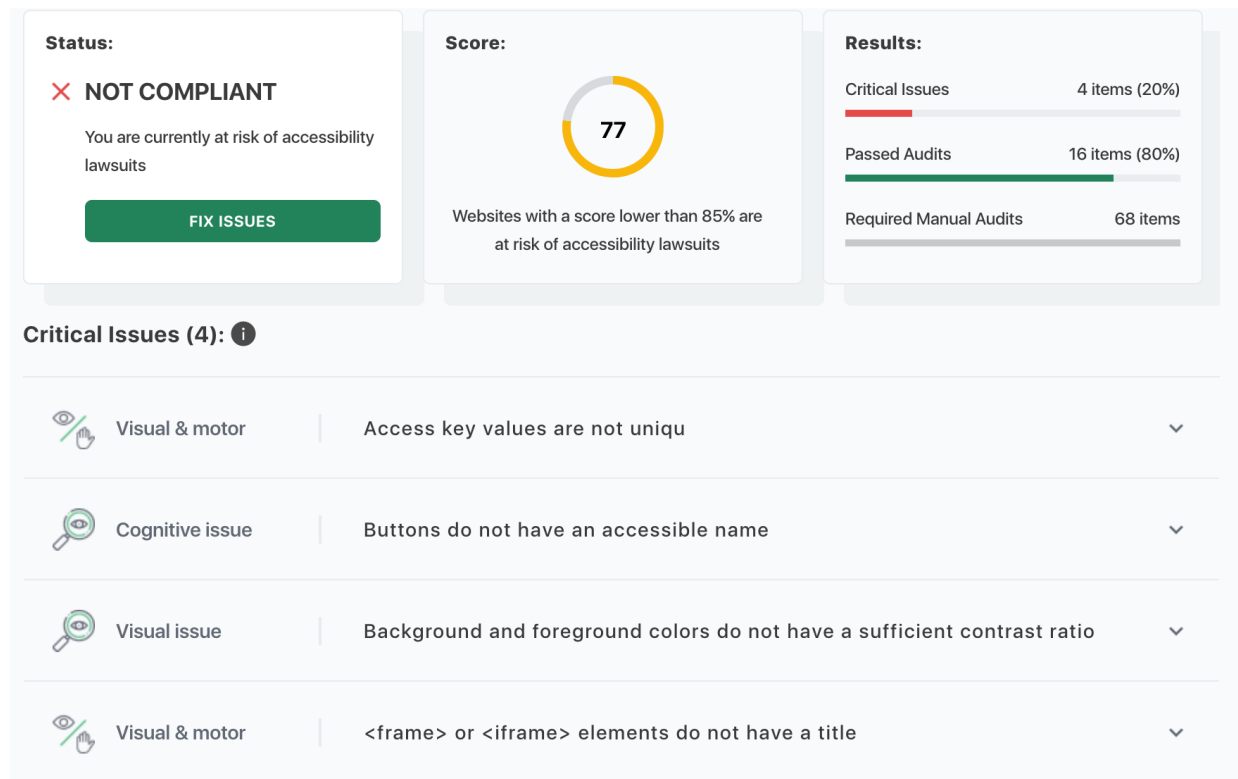
WHAT'S WRONG? OR WHAT'S MISSING?	CAN IT BE FIXED?	HOW?	NOTES
Alt-Text (alternative text)	Yes	The addition of clear explanation of individual images that appear as a thumbnail, or video still in the course.	Missing on every single module's video thumbnails – no text space currently exists to add test descriptions to video thumbnails.
Non-text content explanations for everything that is viewable (this includes background color changes and template/background setting descriptions)	Yes	Creating a simple description of the video in line with the playback images	Missing on each video and needed for non-visual learners to understand what is in the video as well as what is said.
Keyboard-only access hindered	Maybe, eventually	Source code on the back end needs to include alternatives for drop-down menus and scrolling options	Discussion with LMS programmers and product development on the roadmap for meeting this guideline
Including synchronized captions with downloadable authentic scripts- and notating it at the start of the course as well as having options available for the placement of captions, keeping them all set at Open captions, and being able to adjust the size, font, and color of text as well as playback speeds	Yes	By including a text-only and an audio-only version of the entire course and making it available automatically within the starting module. All the captioning features need to be included/built into any video content.	For blind users, an audio description of images that are being displayed with the accompanying spoken script need to be available. For deaf users, the visual cues need to be described in a manner that is understandable play-by-play language such as “when you click the next button, the next module includes another video to play.”
Interactive elements aren't distinguishable compared to non-interactive elements	Yes	Interactive elements need to be labeled by an icon or description	Including an outline or different shape of buttons or any interactive elements need

WHAT'S WRONG? OR WHAT'S MISSING?	CAN IT BE FIXED?	HOW?	NOTES
		of what can be clicked on and where the transcript is stored	to be distinguishable from other non-clickable images, buttons, or menus. There is a new version of the menu bar updating currently.
Help and Questions ...anywhere	Yes	Include a small HELP button at the bottom or top of each module page for information and questions that are misunderstood. The HELP availability can also pinpoint any technical difficulties learners have with the program	Not sure if this feature is 'allowed' in a mandatory/legally required course with exam. Good thing to check first and make available even in non-mandated courses.
Interactivity and movement of objects and animations lack manual controls	Not currently but eventually?	Any flashing or moving pieces of a course (including the video) that lasts more than 5 seconds needs to include a pause, back, forwarding button menu so the user can control the amount of visual stimulation	This feature should be available in every course, on every video- whether natively built or imported.
Description and visual links are missing	Yes	Any hyperlink that redirects learners to another section within the LMS needs to include the entire web address for clarity	Screen readers cannot automatically detect the address of a hyperlink; they will just read the word "link" when text is underlined and designated that way.
Non-required content pages do not include a return menu or site map	?	Users need the ability to 'go back' to the first main menu of a course, be able to jump to any module without receiving a 'fail' or 'incomplete' grading	Adding the button at the top of each page's module is the most used and best recognized space to include: back, forward, return to start/menu buttons.

REPORT PROCESS

I confirmed through the LMS site (LearnUpon.com) that the entire site is WCAG 2.0 AA, Section 508 compliant, which means it's getting a grade similar to a report card "B." This is because the inherent features built into the site are being updated to include the back end code that allows more than just responsive screens, but includes the credit scripts/codes for drop-down menus, non-auditory files, non-interactive content- updated with "aria labels" for many controls that allow keyboard-only and screen reader access. The labels also differentiate between uploaded/embedded iframes that include the description and context of each file.

First I ran the url through the W3C's online free accessibility checker, that creates a highly detailed report of everything visual as well as background code that does not meet the current WCAG 2.1 (already updated!) guidelines. The report includes explanations of problems with each issue outlining how to correct it. Many of the issues are related to the source code that we cannot edit, view, or adjust in any way with instructional designer access. These will be sent to our LMS administrator to further review. LearnUpon states they are in no way responsible for the accessibility of content that is imported by their customer- but recommends we check our own files. A screenshot of the summary of the report is below- which includes correct alt-text!. (There was a fee I didn't pay that was involved to download the entire report):



Next I compared accessibility issues I noticed based on color, movement, and captions' availability. Our LMS doesn't currently include or support any auto-captioned features and clarifies that most auto-captioning changes what was 'actually' said versus what the AI software interpreted.

Ex. *Spoken audio:*

"Broil on high for **4 to 5 minutes**. You should **not** preheat the oven."

Automatic caption:

"Broil on high for **45 minutes**. You should **know to** preheat the oven."

All the captioning files were done to the best skills and software available currently within our company, but need to be improved to include time for correcting any auto-captioned files, making corrections and including transcript downloads for every page, creating files that encompass the non-text components of the video files (i.e. background sounds, music, description of scenes and when they change, as well as timing of the spoken script).

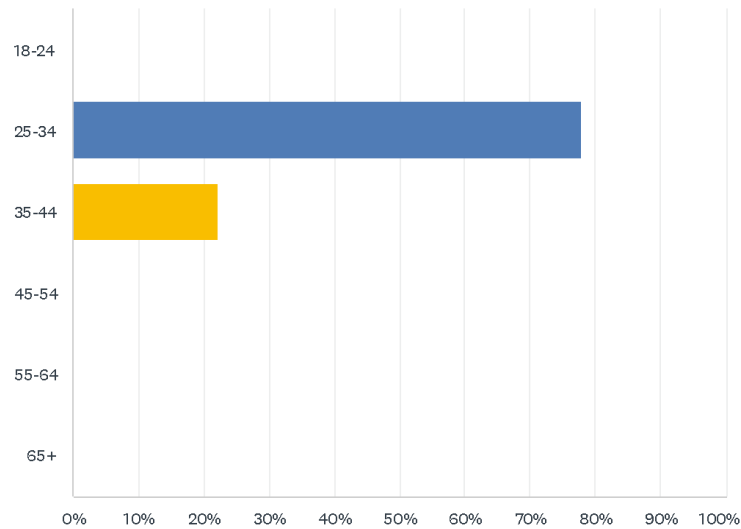
These many different issues can be resolved in a manual process, which would take much more time than initially devoted, and most like a reliable caption producing software and/or an accessibility checker within LearnUpon.

Appendix C: Survey Data

Integrate 2023 Compliance Course User Experience

Q1 What is your age?

Answered: 9 Skipped: 0



ANSWER CHOICES	RESPONSES	
18-24	0.00%	0
25-34	77.78%	7
35-44	22.22%	2
45-54	0.00%	0
55-64	0.00%	0
65+	0.00%	0
TOTAL		9

Integrate 2023 Compliance Course User Experience

Q2 What department do you currently work in?

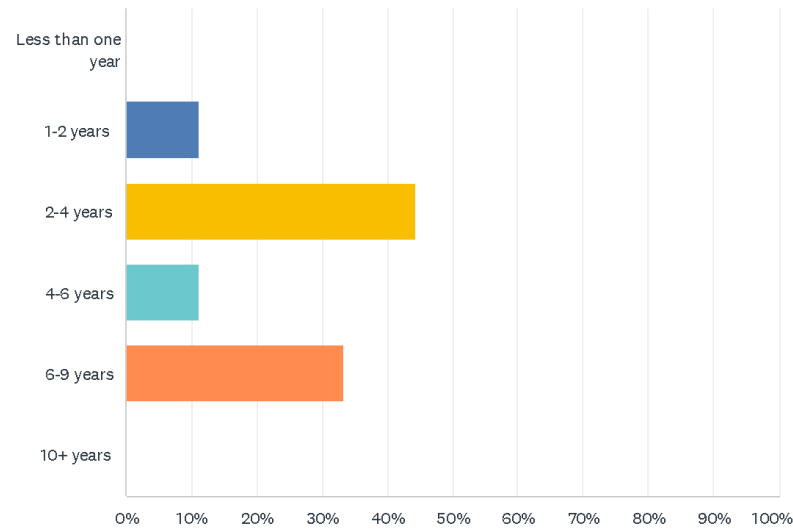
Answered: 9 Skipped: 0

#	RESPONSES	DATE
1	IT	4/11/2023 11:05 AM
2	Human Resources	4/10/2023 4:39 PM
3	Security	4/10/2023 4:33 PM
4	Diversity and Inclusion	3/28/2023 1:57 PM
5	Veterans United Realty	3/28/2023 11:14 AM
6	Learning & Development	3/28/2023 11:07 AM
7	Branch Network	3/28/2023 11:05 AM
8	Product Strategy	3/28/2023 10:57 AM
9	VUR	3/28/2023 10:55 AM

Integrate 2023 Compliance Course User Experience

Q3 How long have you worked at the company?

Answered: 9 Skipped: 0

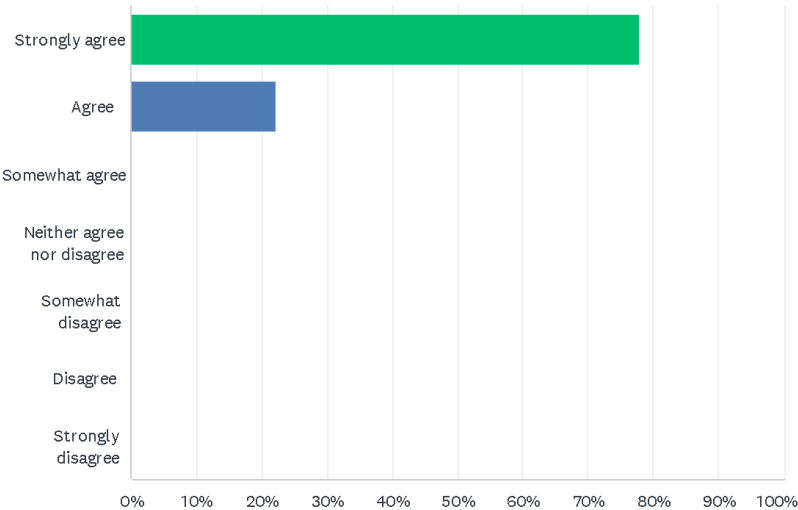


ANSWER CHOICES	RESPONSES
Less than one year	0.00%0
1-2 years	11.11%1
2-4 years	44.44%4
4-6 years	11.11%1
6-9 years	33.33%3
10+ years	0.00%0
TOTAL	9

Integrate 2023 Compliance Course User Experience

Q4 The graphical elements of the interface and the course were easy to understand.

Answered: 9 Skipped: 0

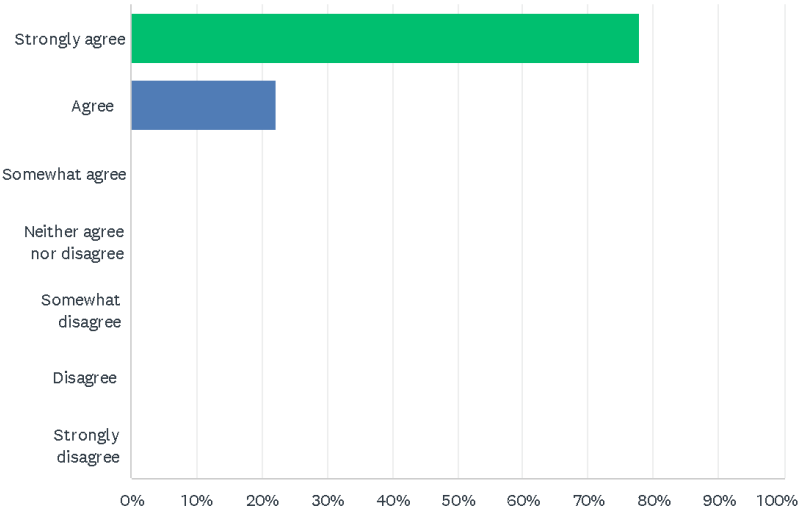


ANSWER CHOICES	RESPONSES	
Strongly agree	77.78%	7
Agree	22.22%	2
Somewhat agree	0.00%	0
Neither agree nor disagree	0.00%	0
Somewhat disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

Integrate 2023 Compliance Course User Experience

Q5 The course was easy to navigate.

Answered: 9 Skipped: 0

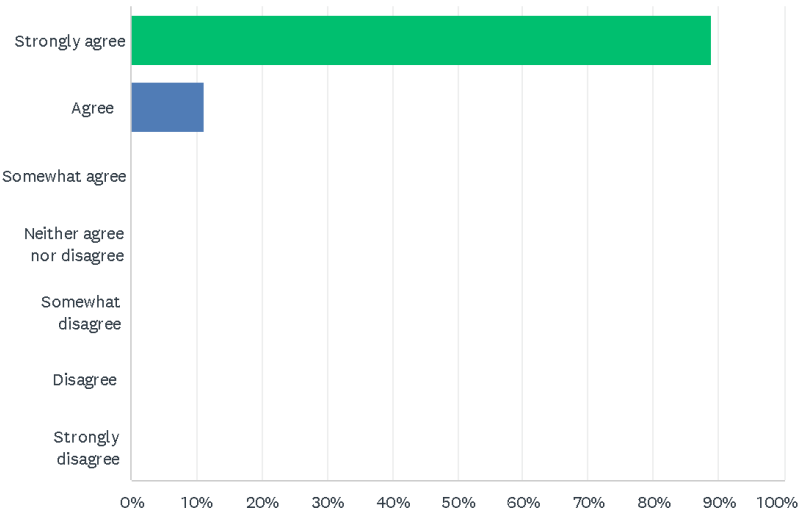


ANSWER CHOICES	RESPONSES	
Strongly agree	77.78%	7
Agree	22.22%	2
Somewhat agree	0.00%	0
Neither agree nor disagree	0.00%	0
Somewhat disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

Integrate 2023 Compliance Course User Experience

Q6 The course content was presented in a clear and organized manner.

Answered: 9 Skipped: 0

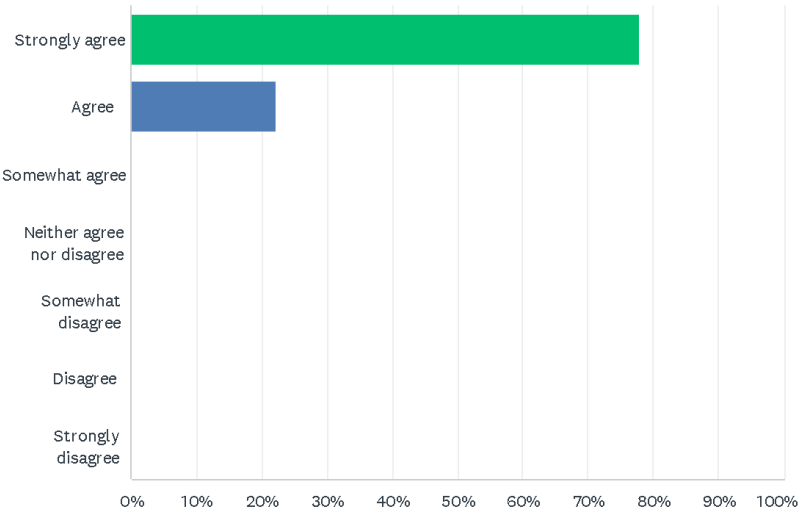


ANSWER CHOICES	RESPONSES	
Strongly agree	88.89%	8
Agree	11.11%	1
Somewhat agree	0.00%	0
Neither agree nor disagree	0.00%	0
Somewhat disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

Integrate 2023 Compliance Course User Experience

Q7 I feel confident in my ability to apply the course material to my job responsibilities.

Answered: 9 Skipped: 0

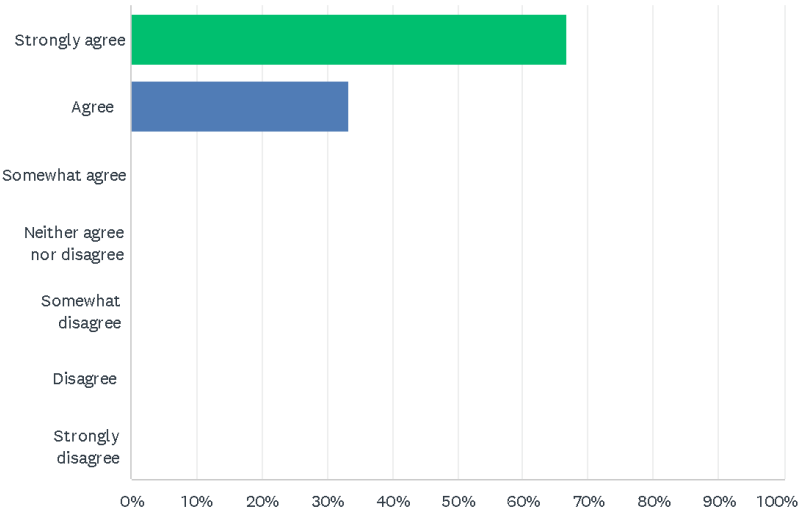


ANSWER CHOICES	RESPONSES	
Strongly agree	77.78%	7
Agree	22.22%	2
Somewhat agree	0.00%	0
Neither agree nor disagree	0.00%	0
Somewhat disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

Integrate 2023 Compliance Course User Experience

Q8 Overall, I feel that the way the course was presented was effective in helping me learn the course content.

Answered: 9 Skipped: 0



ANSWER CHOICES	RESPONSES	
Strongly agree	66.67%	6
Agree	33.33%	3
Somewhat agree	0.00%	0
Neither agree nor disagree	0.00%	0
Somewhat disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

Integrate 2023 Compliance Course User Experience

Q9 What improvements do you suggest for the course interface, navigation, visuals, or presentation?

Answered: 8 Skipped: 1

#	RESPONSES	DATE
1	Is there a way to make the required sections on the menu more obvious? Maybe with a different color.	4/11/2023 11:05 AM
2	The next module button is a little small in the corner. It took me a moment to find it. I'm not sure if its possible to move it to a more prominent location or not.	4/10/2023 4:39 PM
3	I think the Acknowledgement page asks you to "Submit Survey". This is confusing because an acknowledgment isn't a survey. Please consider removing the language around "survey" if possible on that page.	4/10/2023 4:33 PM
4	I thought it was great!	3/28/2023 1:57 PM
5	None	3/28/2023 11:14 AM
6	More concise instruction	3/28/2023 11:07 AM
7	It was tough to understand when I'd reach the end of my courses. I'd think I was done with Compliance and then that afternoon or the next day, there'd be another course. I understand it probably saves the system a lot of load if courses are rolled out gradually, though! And it's not like I wasn't gonna take the courses, just a thought.	3/28/2023 10:57 AM
8	None	3/28/2023 10:55 AM

Integrate 2023 Compliance Course User Experience

Q10 Were there any aspects of the taking this course that you found confusing or difficult to understand? If so, please explain.

Answered: 8 Skipped: 1

#	RESPONSES	DATE
1	The acknowledgement "survey" confused me a little bit. Is there a way to remove the word "survey"?	4/11/2023 11:05 AM
2	I did not find it confusing. I was surprised I had to wait to the end to see what questions I got wrong or right because that's different from last year.	4/10/2023 4:39 PM
3	See above.	4/10/2023 4:33 PM
4	no	3/28/2023 1:57 PM
5	No	3/28/2023 11:14 AM
6	N/A	3/28/2023 11:07 AM
7	Nah	3/28/2023 10:57 AM
8	No	3/28/2023 10:55 AM

Integrate 2023 Compliance Course User Experience

Q11 Are there any suggestions or feedback you would like to provide regarding the course's accessibility for all learners?

Answered: 8 Skipped: 1

#	RESPONSES	DATE
1	I thought it was accessible.	4/11/2023 11:05 AM
2	I liked having the subtitles up the entire time.	4/10/2023 4:39 PM
3	I think that having video speed options and subtitles helps make the courses very accessible to a wide demographic of learners.	4/10/2023 4:33 PM
4	not at this time	3/28/2023 1:57 PM
5	No	3/28/2023 11:14 AM
6	N/A	3/28/2023 11:07 AM
7	I love when videos have closed captioning.	3/28/2023 10:57 AM
8	Nope	3/28/2023 10:55 AM

Integrate 2023 Compliance Course User Experience

Q12 Overall, how satisfied were you with the course experience? Please provide any additional feedback or suggestions for improvement.

Answered: 9 Skipped: 0

#	RESPONSES	DATE
1	I thought it all looked very clean and organized	4/11/2023 11:05 AM
2	I liked the results page at the end of the test. It was easy for me to see what I got right and wrong. I also liked that it was not in a popup window	4/10/2023 4:39 PM
3	I think it was an improvement when compared to the previous "pop-up window" style courses since the whole window didn't need to refresh in between each chapter or item completed.	4/10/2023 4:33 PM
4	I thought it was really good	3/28/2023 1:57 PM
5	Very satisfied!	3/28/2023 11:14 AM
6	Very satisfied!	3/28/2023 11:07 AM
7	I thought that the courses were very easy to follow and were effective training tools. I appreciate the ability to test out of courses.	3/28/2023 11:05 AM
8	10/10 would comply again	3/28/2023 10:57 AM
9	Overall good, but I tested out of taking each course.	3/28/2023 10:55 AM