



The Texas Course Redesign Learning Object Repository:
Research and Development for a Production System

**THECB Learning Object Repository
LOR Version 2 Usability Testing Results**

Prepared for

The Texas Higher Education Coordinating Board

by

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THECB Learning Object Repository LOR Version 2 Usability Testing Results

1. Introduction

In February 2009, the Texas Course Redesign Learning Object Repository project team conducted the first round of usability testing on Version 2 of the LOR with four participants. The four usability testing transcripts were analyzed using the following 27 codes:

navigation bar, collection hierarchy, breadcrumb, page layout, visual representation, page navigation, result navigation, view, download, add to folder, batch organization, terminology, simple search, advanced search, expand search, browse, color scheme, simple metadata record, full record, labels, data value, tier, IMS simple record, glossary, help, mouseover, and overall assessment.

The data at this stage in the analysis included 236 excerpts. These excerpts included all materials from the participants except for clarifying questions and side discussions about topics not related to the usability testing questions. Next, the data were analyzed by going through all excerpts and highlighting specific information relevant to the project. The excerpts were read several times to insure understanding and the participants words were paraphrased and summarized for this report. The following sections present the results and findings from this set of usability testing.

2. Ease of Navigation

2.1 Navigation Bar

Regarding the use of the navigation bars (left side of icons, right side of text links), there was a mixed response. One participant predominantly used the left navigation bar of icons for Search, Browse, and Collections, and stated he saw them and thought "what are they?" and that when he was told to search, he "went to click there kind of naturally." The only thing he used the right navigation bar for was Advanced Search.

Another participant predominantly used the right navigation bar with text links. She stated it was easier for her and she was more drawn to its setup. She said the icons didn't give her anything better than the right navigation bar and that she only referenced the icons after she couldn't find what she wanted elsewhere. She suggested merging the two navigation bars.

The other two participants stated that they liked the way the 2 navigation bars were set up, and that they would likely use both of them.

2.2. Breadcrumb

The breadcrumb was actively used by only one participant. She said it was nice to refer to it rather than looking at the navigation bar to see where she was. Another participant did not notice it until almost the end of the session, and said it wasn't obvious to her that it was there. She stated it would make it easier for her to jump back to other pages more quickly if she had seen it. The other 2 participants seemed more comfortable with the back button or just moving on to new pages.

2.3. Collection Hierarchy

All participants realized the hierarchy existed in collections. Although they were not sure whether their understanding was right or not, three participants thought the Units included Lessons, Lessons include Topics, and Topics include Assets. One participant did not figure out the hierarchy clearly but she thought there was hierarchy because of the label dent as the following:

- History
 - American History
 - United States History I (main course content)
 - 1. Units
 - 2. Lessons
 - 3. Topics
 - 4. Assets

2.4. Visual Representation

Participants were asked about the effectiveness of visual aspects of the site such as text size, boldfacing, underlining, and the visual icons. Overall, participants found these items to be readable and understandable.

When asked whether the title on results was an obvious link, and if it should be changed in some way, participants responded similarly – they thought it was a link but could stand apart from the other text a little more. One thought it would make it easier to read as a link if it was underlined, but said “...it may not look as nice. I think most people know to click on the title now days.” Another commented:

“It may be (obvious). To me, one of things that appeals to me about this interface is that it’s clean. And if you ... I personally would prefer to see the font size go up one number than to add a bunch of underlines, because I think that would make the page look crowded.”

Regarding the effectiveness of the icons on the left navigation bar, the participants thought all were recognizable except for My Account. They didn’t see a pencil as a fitting icon, but didn’t know what else it should be.

For the icon relating to the levels of a course, all participants were confused because this function was not fully operational at the time of testing. They were also confused by the term “size” used as a descriptor of the icon. All first thought “size” related to file size. Upon explanation of the icon and how it relates to the size of the course and what it includes, participants seemed to understand and stated it would be effective, if only they knew more about it. One participant was unclear whether the darker or lighter boxes within the icon accounted for the level number, while one assumed correctly it was the white.

2.5. Page Layout

There were a few items regarding the layout of pages within the site that some participants had problems with. One participant did not like the layout of the simple item record. He said it was “not natural” for him to have to scroll down to find the view/open link. He explained that a new user might not know there was anything below the initial description of the item. His initial reaction was to click the Identifier URI link, which is just the link to the simple item page.

Another participant thought the Collections page was “very distorted,” and that it took a little more management for her to decipher. However, a different participant, who was previously confused as to what would be on the Collections page, understood after he viewed the page and seemed to be able to follow its layout.

Other than these two issues, the participants seemed pleased with the setup of the content on each page.

2.6. Result Navigation

All participants were able to browse through the results with few issues. Two actively used the alphabet links at the top of the page to search for better results, and thought that was very effective. One participant stated it would make it easier to browse the results if he could jump to a particular page

instead of clicking “next page” again and again. The same participant also wondered if there should be a button so he could expand the results to see a bigger record. He stated:

“I’m getting this very nice summary of each one, but if there was a button where I could say “select all” or maybe put a check mark next to certain ones, and then say “compare” or expand the record for the ones that I have selected.”

One participant had trouble finding the lesson he was looking for due to his results consisting of recent submissions. He said he was thrown off by that, and asked how he could see a more complete list.

2.7. Page Navigation

There were two issues regarding page navigation, one covered under “View,” and the other being “Entire Repository” and its links on the navigation bar. More than one participant voiced concern over not being able to find their way back to the Collections page (under Entire Repository) since it disappears after you are browsing in a collection. One participant stated:

“When I was browsing, I went into Collections and when I got into a particular collection, I couldn’t find an obvious way for me to jump back to a collection list. So while I realized that I should go down deeper into the repository, you are gonna have different navigation items displayed. It might also be useful to be able to jump back more easily.”

3. Terminology

Overall, the participants found the terms they saw in the LOR (excluding metadata labels) consistent and easy to understand. However, two terms kept being brought up during testing: IMS and Assets. At first glance, the participants had trouble understanding what an asset was, because it was a term they were unfamiliar with. Eventually, they were all able to figure that out after they read the descriptions on the Asset page or played around with the LOR for a while. As one participant commented:

“I wondered about ‘Assets’ and what that meant. And then I could figure it out. That’s something that, as a newcomer to the learning object repository, it’s not something that just makes... I’m not immediately certain of what that means. But it did become apparent once I went into the area and learned more about it.”

Three participants did not know what ‘IMS’ stands for until the facilitator explained it to them. They had never heard of this term before and did not see a definition on the website. It is noteworthy that one participant who did not know IMS did know SCORM; she said her college kept stressing SCORM to the instructors. Besides ‘Assets’ and ‘IMS,’ one participant went to a particular collection and was confused by the term ‘This Collection’ under the search box on the top right corner.

4. Search and Browse Capabilities

4.1. Browse

All participants used the quick link browse icon and navigation bar on the right. One participant would like to use the navigation bar at the right of page because she was drawn to there by the all capital letter “COLLECTIONS”. All participants used the alphabetic letter index to help browse. One participant thought the search function was more useful than browsing because if there were more course and tens of thousands of LOs, the browse would take too much time so he would like to search directly. Another participant recommended in results list the media formats (have provided by LOR such as animation, audio, video; or which kind of animation format such as flash) could be shown. She said:

“I guess browsing by the media format. When I click on animations these are all animations. It might be nice having an icon here or a letter...indicate which kind of media you have.”

“So in the browse display this shows it is an audio, so I am sure all are audios, or whatever. Here I am not really searching. I am searching for a topic within a particular format I have already selected. I do not see anything here ... I am not sure I am in the audio, or any I the selected the animation, especially for a flash game or anything.”

4.2. Expand Search

All participants wanted to narrow down the results of browsing or searching further. Two participants recommended narrowing down the results list by "search within results". The other two participants also tried to narrow down the browse results. They did a search in the wrong place and entered the key words in "enter first few letters" which is used for browsing by alphabetic letters. One participant clearly expressed his need:

“I’ve got 244 results, which is too much. Let me try... I wish I had a “search within results” feature, but I don’t see one.”

4.3. Advanced Search

All participants used the advanced search. Two participants selected the “Full Text” in all three fields. Another participant selected “Full Text” and “Summary” in the search type fields. The other participant selected “Subject” as the search type. None of them used the “Title” as search type.

4.4. Simple Search

All participants used the simple search function by quick link icon or search field on the right corner. One participant used the Boolean symbol "+" to do a Boolean search.

5. Accessibility

5.1. Add to Folder

One participant suggested the following regarding a way to store items they wanted to return to later:

“...it would be nice to be able to make selections of objects. As you go along, if I’m looking at 28 objects, and I find 3 that look like potentially useful, it’d be nice for me to be able to click on a check box and say “can I keep these over here”. So I want to be able to go back and look at the ones that I found most interesting, not having to remember that they were No. 2, No. 8 and No. 17.”

5.2. View

All participants wanted an easier way to get back the Repository after they opened a Learning Object. None of them liked how the Learning Object opened in the same window as the Repository, therefore taking them away from Repository page with no way to get back other than the Back button on the browser.

One participant stated: “I would like any links to open in new tab or window if that is possible, this would make it easier.”

5.3. Download

Almost all participants are not clearly how to download the IMS content package. Finally two participants figured out how to download the IMS content package correctly. The other two participants could not download IMS content package correctly. They tried to download by right clicking the IMS Content Package link or the file. For participants there is no big difference between IMS and SCORM but one said she probably lean to SCORM because she heard this standard. Another concerned about which one fitting to course management systems they use. One participant thought for blackboard both IMS and SCORM are accepted.

6. Color Scheme

There was a varied response to the color scheme. The questions were mainly focused on the results color scheme, to make sure that everything was varied enough for users to see. One participant stated they liked the colors, and thought they were “really nice,” and another stated it was “easy on the eyes.” However, one participant thought there might be a problem with some users seeing the darker colored results and the blue text together. One participant that liked the colors thought the title needed to be a stronger color to stand out more. The last participant stated “It’s just kind of [pause] ...everything being just real subtle blue is just a little boring.”

7. Metadata

7.1. Labels and Data Values

Participant #2 noted that it would be useful if the summary of the learning object contained type of learning object. However this participant added that the current summary information would be “fine if you allow the user, in the advanced search area, more flexibility in what they are searching for”. Participant #2 stated that the label learning object type could be confusing “because when I think of learning objects, I might think, well, it’s a text file or it’s a webpage, or it’s a flash file or something like that.” She added, “that field contains the word “lesson” then it is immediately tied back to the hierarchical structure that we were looking at earlier, this label is one that kind of self-clarifies as the user realizes one of the content items in that field. So when they see “lesson” they will immediately go “oh ok, lesson, as opposed to chapter or whatever.” Participant #4 found it confusing that the metadata element learning object type has one value which is lesson for units, lessons and topics.

Participant #4 found Title for IMS content package not descriptive enough. He noted that, “Unit1, Lesson2, Topic1 does not make sense to me”

In the results list most of the participants found label size confusing. Participant #1 could not figure out “what the size is in relation to.” Participant #2, 3, and 4 assumed that that the metadata element tells “how big the object is.” Participant #2 stated that “when I was looking at these records initially, and I saw Size, I immediately thought, oh, they are trying to tell me how big this object is. So when I download it, whether it will bring my system to a halt.” Participant #4 noted that it would be less confusing if this field contained values “Unit, or Lesson, or Topic, or Asset, or whatever.”

7.2. Simple Record

When asked about simple item record, all participants found it useful and that it contained enough information to give them sense of the learning object. Participant #4 stated, “it had enough to give a sense of whether I was interested in it or I needed to go to another one.” Participant #3 mentioned that the Author, Author’s Affiliation and Date Created are not important for her in the simple item display.

7.3. Full Record

During the usability testing only one participant actually looked at the full record. When asked to go to the full record item display and look at it, all participants said that they probably would not use the full item record to get information about the object. In their words, when looking at the full item display they had an impression that they were looking, “into the bowels of the learning object repository”.

Participant #3 stated, “I do think that when people who are not familiar with this type of application look at the page that has the full record descriptors, they might wonder what in the world all that stuff is.”

While looking at the full item record participants were asked to look at two metadata elements “dc.relation.haspart” and “dc.relation.ispartof and report their understanding of these two elements. All participants showed a reasonable understanding of the purpose of these elements.

Participant #1 stated, “OK, it is probably an object that belongs to the lesson, maybe or something like that, or part of the lesson that belongs to the unit.”

However, all of the participants indicated that since these two elements are in the full record display they would not even look at it.

7.4. Tier

All participants preferred the three tiered view of the record. As participant #1 stated, “I think I would prefer three tier. Because I like that secondary small list because it gives me more information without making me wade through all of the information, all of the metadata. I like it, I would use this short item record, like you call it.” They all found the simple item record showing enough information to make a decision on learning object selection. The participants stated that they probably would not use the full item record at all. Participant #2 said: “when I go look at the full item record, I see all this scary stuff and it doesn’t have the Title first, and all that. The way things are today, I would say, oh girl, you gotta stick with the short item record.”

8. Technical assistance

Based on their confusions with those terms, the participants brought up several issues regarding technical assistance that they wish they could get but did not. One participant stated that she wished there could be a help button that she could click on to understand how to download a lesson. Another participant suggested adding a glossary that users could go to if they were unfamiliar with or curious about some terms and acronyms. When the facilitator brought up the idea of using mouseovers, this participant thought they would be helpful too.

9. Overall assessment

Toward the end of the interviews, the participants were asked about their overall assessments of usefulness, ease of navigation, consistency of terms and actions, browse and search capabilities, and some other aspects of the LOR. Their feedbacks were positive. They found the LOR user friendly and easy to use. Also, they expressed confidence in using the LOR and describing it to their colleagues.

10. Implications

The findings indicate that familiarity is the key to resolving the issues of terminology and technical assistance. People can easily understand the terms they have seen in other online catalogs or digital libraries; the terms that might bog them down are the ones they are unfamiliar with. According to the participants’ experience, three words used across the LOR might cause confusions: Asset, IMS, and Collection. The first two terms do not appear often on the Internet, and ‘Collection’ refers to different things in different contexts. When the participants could not figure out the meaning of a word or phrase, their first reaction was looking for some form of descriptions on the website that could help them understand the meaning. They would look for some kind of help button or files they usually see on other websites. Again, they would look for something they are familiar with.

Therefore, the project team basically needs to consider two major things. One is to rephrase those problematic terms. Interestingly, the participants could easily pick out the terms they found confusing, but they could not think of a better term. The other thing, as some participants suggested, is to add assistance features that will come in handy whenever they get confused about something they see. As for the form of assistance, one participant stated that she was trying to find a help button, and another suggested adding a glossary of terms. When asked if definitions in the form of mouseover would be helpful, they also said yes.

Also, participants were confused about Learning Object Type lesson value. The meaning of the value in this field does not fit their perceptions. For example when they see lesson in this field they assume that this is a lesson, even though this metadata field has the same value in the field for units and topics as well. All participants would like to have three tiers for the metadata record display. All of them liked the simple item record and stated that it provides all the information that they need to make a decision in

selecting learning objects. They would not add any more information to the simple item display. All participants indicated that they would not use the full item record.

All participants understand the collection hierarchy by their common sense or label dents. This reminds that using label indentions to express collection hierarchy can be used in interface development in the project in the future.

Both browse and search are useful. But the browse capabilities are not explored completely by participants. They did not realize they can also browse by titles, subjects, authors, media formats in a specific collection. So one participant thought when there were tens of thousands of LOs, the browse function would be useless. For search function, only one participant try to figure out the ways the LOR provide to sort the search results. Other participants seem not to pay attention to the “Sort items by” function. It is better to have an assistant document to introduce the browse and search capabilities. To narrow down search or browsing results by expand search is needed. All participants recommend this need. The “enter first few letters” in the browse result page is easy to confuse users as a search within the results function.

The download function needs to be described more directly and clearly. The participant even do not know the relationship between a LO and its IMS content package. The label “Learning Object Description” and “identifier URI” in the IMS content package do not make sense to participants. Also, one of the participants found that the IMS content packages do not have descriptive titles.

For users to navigate the site without confusion, all areas of the site need to be organized in a way to show definite hierarchical structure. There only needs to be one area for browsing, one area for personal account information, etc. Having better organization will lead to a better understanding of how to find things a user needs with a clear path to get there. Users have to be able to recognize links to click them, and understand immediately how to download or view an item. Therefore, making links, icons, and buttons follow web standards for visibility will make that easier.

And while it is important not to hide information users may need (like the Collections page), it is also important not to overload the user with too much information on one page. They will be searching quickly for something and scanning information. That's why the expand/collapse (or less/more) feature throughout the site could be effective in showing the user the most important information quickly, and also allowing them control in what they want to further investigate. This relates to the My Folder idea as well.

11. Recommendations

- Add a glossary for the abbreviations, less commonly-used terms, and confusing terms, including LOR, Discipline, Sub-Discipline, Collection, Asset, IMS, SCORM, etc.; make the link to the glossary visible on the LOR homepage or make those definitions part of the help file.
- Use mouseovers on the collection hierarchy page, result lists, and simple metadata records.
- Add a description of what an IMS content package is on the IMS Content Packages homepage (http://txcdk1.unt.edu/THECBLOR_v2/handle/2188/970) so that user would understand what 'IMS' stands for when they enter the page; do the same for SCORM, if needed.
- Put the “Learning Object Description” metadata element of IMS Content Package collection in the simple record instead of result list.
- Add the “Course Name” element in the IMS Content Package metadata record result list.
- Hide the metadata element IMS Content Package from the simple record; only show the Download button.
- Wherever the simple search feature allows the user to select searching either in the entire repository or in a particular collection (for example, http://txcdk1.unt.edu/THECBLOR_v2/handle/2188/8), change the term ‘This Collection’ on the top right corner to ‘Search This Collection’ so that it would look consistent with ‘Search Entire Repository.’
- Wherever the simple search feature allows the user to select searching either in the entire repository or in a particular collection, explore the possibility to customize the term used for

indicating a specific collection; use 'Search US History I Lessons (or Units, Topics, etc.)' instead of 'Search This Collection' if possible.

- Use the dent labels to visually represent the hierarchy collection for example:
 1. Units
 2. Lessons
 3. Topics
 4. Assets
- Take off the "Or enter first few letters." field in the browsing result page and apply the simple search function in that page. Apply the "search within results" function in the result list page to narrow down the search results.
- Keep the advanced search. Take the "Title" off from the search type.
- Apply the Boolean search on simple search function if it is possible.
- In the IMS Content package metadata field put value: click here to link to the page for downloading, and in the IMS Content Package collection using "download" instead of "view/open" or put "<- click here to download".
- For the navigation bars, completely remove the navigation bar with icons and place the icons next to their respective text links. By this way users who prefer the visual cues of icons will be able to use them, and text links will be there for users that prefer that kind of browsing. It also helps for better organization.
- For the breadcrumb, participants liked the idea that it was an available way to navigate. However, since one failed to notice it until the end, and it is located separate from the body of the page in a gold bar more aligned with the banner, move the breadcrumb into the top body about half an inch above the heading of each page. This way it will have a more visual relationship with the site's content.
- For add to folder, make this option available within the results for each item next to Download and View. This way a user can quickly store an item in their folder and keep browsing.
- For View, make Learning Objects open in a new tab or window.
- For the color scheme, change the results from gray and blue backgrounds with blue text to have more contrast. Since all monitors show colors differently, make sure each element on the page has enough contrast to not blend together. Tweak the color scheme to have more of an overall contrast, so not everything is so subtle. Use a "pop" color in small amounts to bring attention to important areas such as headings, links, and buttons.
- For visual representation, important changes to make are to set the results icon apart from the description of the item (suggestion is to make the font larger and leave more space beneath the title). For the My Account icon, change it from a pencil to a person, which is the most common icon used for My Account on the web. For the course level icon, this is an unresolved issue and should be further tested when finalized.
- For the page layout of the simple item record, move all options (download, view, add to folder) to the top of the page. For the Collections page, alter the appearance of the text to better show the hierarchical structure through use of boldfacing, color, and text size, instead of having everything the same. And instead of having every single piece of the collection viewable, add an expand/collapse feature to the page, so that users can first find the discipline and course they are looking for, then expand to see more options. This will help users find what they are looking for faster, especially when multiple disciplines fill the Repository.
- For result navigation, add a box to enter a page number, as well as page numbers that users can click on instead of just the "next page" link. Also consider adding a button to see more information that will expand the results on the page, so users can view information quicker, or compare different items. In the places on the site that show recent submissions, change it to automatically show all submissions, with an option to show just recent submissions.
- For page navigation, specifically the Entire Repository heading and its links: Allow Entire Repository as a heading to remain in view when a user browses a collection, but do not show its links. Instead add a plus sign or other visual cue to let the user know it is an option. Keeping the links hidden until a user wants them would be effective so they do not confuse the links under Entire Repository and This Discipline/Collection.