

Usability Test: *Duke Digital Repository*

Recommendations

1. Exporting files:
 - [Buttons] Replace the “Select an action” menu button with a “Download” button. Consider adding download buttons in dataset records next to “Data” and “Documentation.”
 - [Vocabulary] Evaluate options for renaming “Export Files” so the language is consistent with that of the download buttons.
 - [Process] Consider making the bulk and single file downloading process the same for consistency (e.g. link sent via email or in browser download).
2. [Documentation title] Incorporate dataset title in documentation and data file names and evaluate options for highlighting their relation to the dataset.
3. [Versioning] Change the banner color from green to orange on previous dataset versions.
4. [Concept] Consider providing users with a definition for various repository components (e.g. “Dataset,” “readme,” etc.) as well as their relations.
5. [Metadata] Evaluate options for renaming metadata label “Creator” to differentiate the data creator from the dataset record creator.
6. Left-hand facets:
 - [“Publication Date” facets] Provide date ranges rather than specific dates under the “Publication Date” label.
 - [“Subject” facets] Consider using broader concepts under the “Subject” label and adding top-level categories.

Further Testing

1. Test whether the Duke University Libraries global navigation bar is distinguishable from the repository-specific menu. Does the current display make sense to users?
2. Test what icons would represent effectively the various repository components and be meaningful to users.
3. Test which information in the “Versions” section is meaningful to users and where the versioning information should be placed on records.
4. Test whether indicating how many files make up the “Data” and “Documentation” (“Items” section) would help users understand the relation between components.

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Background

This study was conducted to test the overall usability of the Duke Digital Repository application, evaluate its main features and provide recommendations for future improvements and testing. The study was developed by Moira Downey and Susan Ivey and conducted by Anne Le-Huu Pineault and Yu Yuan with the guidance of Emily Daly.

On June 28 and 29, 2018, we recruited 7 users at a table set up in the lobby of Perkins Library at Duke. Data from a pilot test which was conducted with an AUX intern who was unfamiliar with the Duke Digital Repository is also included in this report. Each participant was given a voucher for a coffee or snack in exchange for their time. Yu Yuan and Anne Le-Huu Pineault both served as moderators and notetakers.

The Duke Digital Repository prototype (<https://rdr-pre.lib.duke.edu>) was used for testing.

Questions we hoped to answer through this study:

1. What do users notice about the homepage and a dataset record? What elements or features stand out, make sense or don't make sense?
2. Can users find and interpret facets and labels to narrow down their search results?
3. Can users do bulk and single file download?
4. Can users locate and interpret dataset metadata? More specifically, can they locate the citation information and identify what dataset version they are currently looking at?
5. What features or design elements could be changed to make RDR more usable?

Participants

Participant demographics (including pilot test participant):

- 3 Undergraduate students
- 2 Graduate students
- 1 Postdoctoral scholar
- 1 Duke faculty
- 1 Duke staff

6 participants indicated that they had experience searching for or using online research data, and 4 have produced research data.

Post-test responses are included in the Key Findings section. Pre-test questionnaire responses are available at the following link: <https://q1.tc/UfEPG9>.

Key findings

1. What do users notice about the homepage and a dataset record? What elements or features stand out, make sense or don't make sense?
 - 2/8 users associated the blue box icon with Dropbox. These same users tried to interpret the various icons, one of them guessing that the "Data" files were "probably an Excel spreadsheet."
 - 3/8 participants thought that the library navigation menu was specific to the interface
 - 1/3 clicked "Search & Find" when asked to run a search
 - 1 user mentioned that they would like to see autocomplete suggestions in the search box.
 - 3/8 participants appeared to be unsure as to what the repository's scope is
 - 2/3 believed that they could search and browse published articles as well as data in RDR
 - 1/3 thought that the "Citation" metadata pointed to a published article incorporating data from the dataset they were viewing.
 - Labels and facets:
 - Instead of seeing specific dates under the "Publication Date" label, 2/8 users mentioned that they would like to see date ranges or fields to input preferred dates and remarked that this was one of their least liked features.
 - Under the "Subject" label, a participant suggested using broader concepts, and potentially creating a menu and submenu (e.g. physics - radio emissions).

On metadata

- 2/8 participants were not sure about the meaning of the metadata label "Creator". One of them wasn't sure whether this referred to the author or the person who uploaded the dataset. The other participant liked being able to see other datasets they were linked to, but would have liked to see what their affiliation was and mentioned that this was one of the features they liked least.
- 1 user mentioned that the abstract was too long, burying the content on the page. They suggested shortening the abstract and providing keywords.
- About the clickable publication date, a participant mentioned that they were not sure how useful it might be to users to be able to find other datasets shared on the same date.
- 1 participant mentioned that they would like to see a link to published articles related to the dataset

2. Can users find and interpret facets and labels to narrow down their search results?

- When asked to narrow down their results to find the readme file for a dataset:
 - 3/8 participants successfully used the left-hand facets to narrow down their results and find the readme file
 - 2/3 users were confused by the record title "Documentation," but ultimately located the readme file

- 1/3 user did this after unsuccessfully searching “readme”
 - 2/8 navigated to the readme file by going into the dataset record, and clicking “Documentation”
 - 3/8 searched [radio emissions readme]
 - 2/3 were then able to navigate to the file from the dataset record
 - 1/3 was unable to locate the file
 - Of the 7/8 users who were able to locate the readme file, all 7 navigated to it, either after using facets to narrow down results to text files, or independently. 7/7 were not sure whether they were on the right track until they located the readme file on the “Documentation” page. 1 participant who did use the “txt” facet mentioned that they would like to see “readme” appear before landing in the “Documentation” record.
3. Can users do bulk and single file download?

Single file download

- 7/8 participants successfully downloaded a single file
 - 3/7 downloaded the file directly from within the “readme” record by clicking “Download the file” on the left hand side. One of them was surprised that the download process differed from the bulk download feature (download link sent to email address).
 - 4/7 downloaded the file from the “Documentation” record, by clicking “Select an action” and “Download”

Bulk download

- Although 5/8 participants successfully completed the task, overall 6/8 participants showed their uncertainty about the exporting files feature in the following situations:
 - 4 users were either unsure about the type or the amount of files that would get downloaded; 2 more were confused about how the files would get downloaded.
 - 2 users were confused by the meaning of the “Export Files” phrase.
- Of the 3/8 participants that were unsuccessful
 - One clicked “Dataset” under the “Type” label (in metadata) and thought that the results obtained were the data associated with the dataset they were interested in. They mentioned that they would go to each link and click on the “Export Files” button.
 - One clicked the “Export Files” button located on the “Data” page, thinking that they had downloaded all the data. This user had previously asked “Is dataset a type? Is everything in this database a dataset?”

Feedback on downloading process

- One participant who understood the various file level categories and download options listed “Export Files” as one of the features they liked best.
- 2 users remarked that they dislike the current exporting feature and would prefer to see files downloaded directly onto their computers. One of them commented that logging in could

suffice to ensure that they are properly authorized and mentioned this process as one of the features they liked least.

- A participant would have liked to see checkboxes to select the files they wished to download, as well as more feedback once the exporting process was complete.
 - 2/8 participants disliked having to click “Select an action” before selecting “Download.” One of them mentioned that they would have expected to see more actions listed, and the other listed this as one of their least liked features. (*Note: On the main dataset record, no buttons appear under “Actions.” It can be confusing to users who have previously seen or used the button*)
4. Can users locate and interpret dataset metadata? More specifically, can they locate the citation information and identify what dataset version they are currently looking at?

Citation information

- 7/8 participants found the citation information, 3 of which listed this as one of their preferred features
- One user suggested changing the “Citation” label to “How to cite it” to avoid confusion with published articles for which this dataset was used
- One user suggested indicating the citation style (e.g. APA, MLA, etc.) or providing other citation style options.

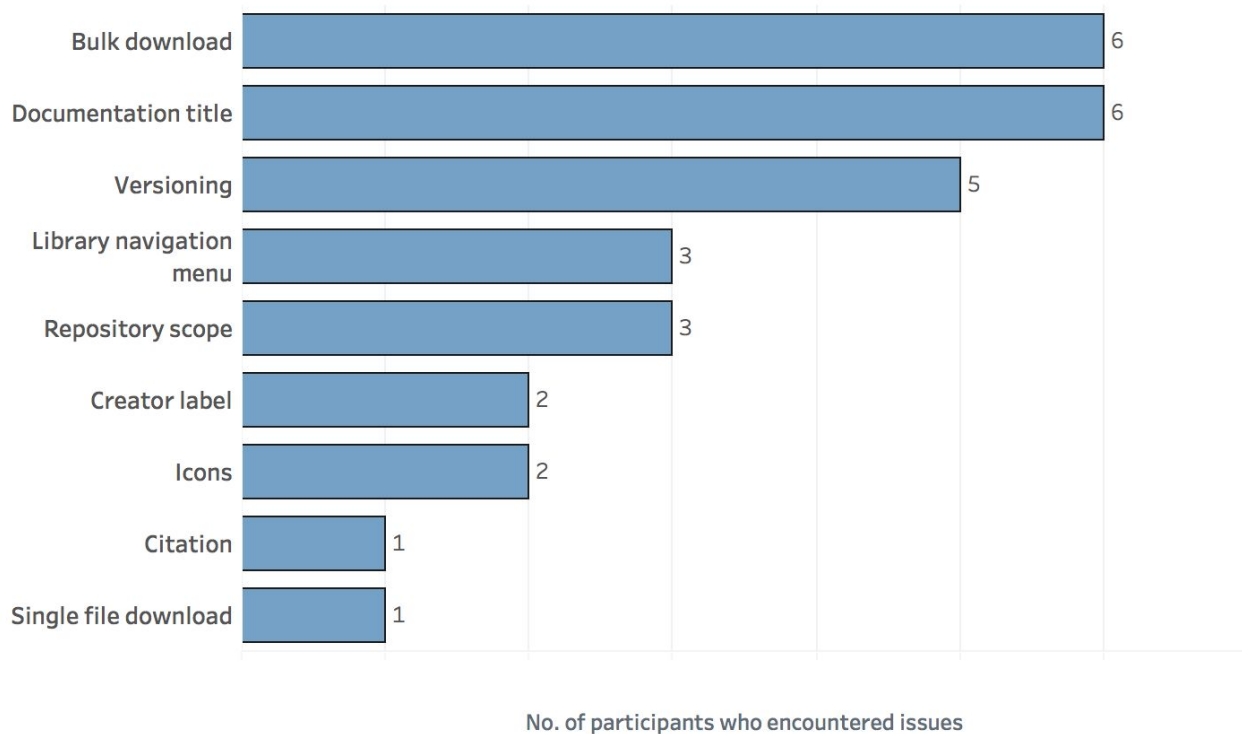
Versioning

- When asked what version of a dataset they were viewing, 5/8 users started by looking at other metadata
 - 3/5 users first looked at the “Date Uploaded,” one of which subsequently located the versioning information but was unsure as to whether they were viewing the most recent version
 - 2/5 users first looked at the “Publication Date” in the metadata under the abstract, and ultimately based their answer on the “Date Uploaded”
- 3/8 users looked to the “Versions” section, all of which determined that they were looking at the most recent version. However:
 - 1/3 users did not understand the meaning of the “Versions” heading and expected the current version to be further highlighted. They listed this as one of the features they liked least.
 - 2 users remarked that they didn’t know what DOI means

5. What features or design elements could be changed to make RDR more usable?

The bar chart below shows the number of participants who encountered issues when interacting with specific features or design elements during testing.

In numbers: Features or design element issues



Methodology: Data from Key Findings was compiled to produce this chart. Participants expressing confusion, taking unnecessary steps or failing to achieve testing tasks using a given feature were interpreted as “issues.”

Appendix A: Test Script

Hello [NAME]. Thank you for volunteering to participate in this study. My name is [NAME] and I will be walking you through our tasks today. I will mostly be reading from a script to ensure each testing session is as consistent as possible.

The goal of this study is to test the usability of a new platform for publishing and discovering research datasets here at Duke.

All of the tasks we are going to complete today should take around fifteen minutes, but don't worry about going too fast or too slow. There is no right or wrong action, because I am testing the system, not testing you. I will ask you to think aloud while you complete tasks using the system so that I can get an idea of the thought process behind your behaviors. Your input is very valuable to our research so please be as honest as possible when providing feedback. If you have any questions as we go along, don't hesitate to ask. I may not be able to answer them right away, since we're interested in how people do when they don't have someone guiding them. But if you have any questions when we're done I'll try to answer them then. Do you have any questions for me so far?

Before we get started, I need your full name to confirm that you've consented to participate in this study.

[TAKE DOWN PARTICIPANT'S NAME]

Thank you.

Now I'd like you to answer a few questions about your previous experience. I have the questionnaire pulled up on the computer. Please take a moment to complete it. Let me know if you have any questions.

[PRE-TEST QUESTIONNAIRE] demo, experience

[If user does not have any experience with research data: I see you have answered that your experience with research data is limited--just to provide you with some context, we're building a web application to preserve and make available the information that researchers create or gather during the course of their research. This usually means materials like notebooks or spreadsheets or other kinds of numerical data.]

Now I'm going to ask you to try doing some specific tasks. Please remember to think aloud as you complete each task. For this exercise, I'd like you to imagine that you are working over the summer with

a professor who is doing research on the physical properties of lightning. She would like you in particular to work with a dataset called "Data from: Very High Frequency Radio Emissions Associated with the Production of Terrestrial Gamma-ray Flashes."

[TASK 1]

Spend a few minutes exploring the homepage and other areas of this interface, browsing and searching around, and talk aloud about your experience. What things do you see? What makes sense/doesn't make sense?

[OBSERVE: We are interested in very general thoughts.]

[TASK 2]

1. Try searching for the phrase "radio emissions". Click on the first result. Explore this page, and please describe aloud what you're seeing.

[OBSERVE: What things does the user click on? Do they scroll all the way down, click on any of the hyperlinks, including those for the component parts of the dataset? Are there any comments about the tags and Analytics/Export files buttons? Do they click on Analytics or talk about what they find there?]

2. Let's return to your original search results. Now say you're interested in narrowing down your search results to find the readme file for this dataset, which contains information about the data and is in the form of a text file. How would you do that?

[OBSERVE: Does the user Export all Files? Use the dropdown menu option associated with the file?]

3. [IF THEY FIND THE readme] If the professor wanted you to get her a copy of this readme file, how would you do that?

[OBSERVE: How does the user get back to the search results--do they use the back button? Do they click on "Return to search results" in the breadcrumbs at the top of the page? Does the user make use of the facets? Do they use the "Format" facet or the "Type" facet?]

[TASK 3]

[Return the user to the main dataset page for "Very High Frequency Radio Emissions"]

Let's say the professor you're working with this summer wants you to download all the files in the dataset. How would you do that?

[OBSERVE: Does the user try to download the files one at a time? Do they use the Export Files button (and can they walk through that wizard w/out any problems)?]

[TASK 4]

Your professor has also noted that she is only interested in the most recent version of this dataset. Can you tell what version of this dataset you are currently looking at, and if it is the most recent?

[OBSERVE: If the user is not on the most recent version, there should be a large green banner at the top stating that there is a more recent version available (with a link to it). In the versions tab, the version that the user is looking at won't be hyperlinked. UNFORTUNATELY, the hyperlinked DOI won't resolve properly because these are just test DOIs at the moment. This is not a bug, and you can tell the user they can ignore the hyperlink. If they click on it, just go ahead and hit back.]

[TASK 5]

You need to cite this dataset in a research paper or a publication. Can you show me where you would go to get the citation info for this dataset?

[OBSERVE: Can the user find the citation in the metadata field? None of it is actionable, so we just want to know if they can easily spot it.]

Follow-up: Is there anything that would make that information easier to find?

[END TASKS]

Great! That concludes our final task. I have some additional questions I'd like to ask you.

[POST-TEST QUESTIONNAIRE]

Thank you!

Do you have any more questions for me?

Thank you so much for your participation in this study.

Have a great day!

Pre-Test Questionnaire

1. Which of the following describes you best?
 - Undergraduate student
 - Graduate student
 - Doctoral candidate
 - Faculty
 - Staff
 - Other: _____

2. IF UNDERGRAD/GRAD/DOC: What is your major or program of study?

3. IF FACULTY/STAFF: What is your department?

4. Do you produce research data as a part of your research?

5. Do you have any experience searching for data online or using research data that you've found online?

Post-Test Questionnaire

1. What two things about this application did you like best?

2. What two things about this application did you like least?

3. Do you have any other comments or suggestions?
