# **Heuristic Evaluation Project**

## System - D-Scholarship@Pitt

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## **Project description**

Our project was aimed at evaluating the design, functionality, interactivity and usability of a system keeping in mind good design practices, user centric needs and user experience.

Methodology Intensive Interface and UI Testing
Intensive Functionality Testing
Heuristic Evaluation
Usability Aspect Reports

## **System description**

#### - About

D-Scholarship is an institutional repository for the consolidated research output of University of Pittsburgh. It is a system used for archiving varieties of items, including journal articles, thesis, Electronic Theses and Dissertations (ETDs), book chapters, and more, for staffs and students in the University of Pittsburgh. Besides that, the system will always ensure the continued readability and accessibility of items in the repository. D-Scholarship is a hosted and maintained by the University Library System of the University of Pittsburgh. It is based on Open Access principles - all materials in the repository are freely accessible to the global research community. The content can be uploaded by any author with an active University of Pittsburgh account but is strictly restricted to scholarly research materials.

### - Highlights

Provides the aided benefit of preservation of work contained in the system repository.

Provides stable, long-term storage and ongoing maintenance for content contained within the repository.

Designed to increase discovery of your research by allowing indexing by Google and other major Internet search engines, the Pennsylvania Digital Library, and PITTCat+.

# **Summary Table**

<u>ID</u>	<u>Name</u>	<u>Category</u>	Good fea- ture	Prob- lem
1.1	Minimalist layout design for the home page	Simple and Natural Dialog, Speak the User's Language	Х	
1.2	Font size is too small	Speak the User's Language		X
1.3	Cannot return to the homepage from other parts of the website	Be Consistent, Provide Shortcuts		X
1.4	Use of uncommon acronyms without explanation	Speak the User's Language		X
1.5	No way to cancel loading of most downloaded papers	Provide clearly marked exits		X
1.6	Form Staging	Simple and Natural Dialog, Minimize User Memory Load	X	
2.1	Browse papers by School with long list	Simple and natural dialog		X
2.2	Brower papers by different categories	Provide Short Cuts	х	
2.3	Level tree	Minimize User Memory Load, Be Consistent, Pro- vide clearly marked exits	х	
2.4	Two re-search ways	Minimize user memory load	х	
2.5	Advanced search error report	Good error messages	Х	
3.1	Action buttons always on the screen obviously	Minimize User Memory Load, Be Consistent	Х	
3.2	Showing available mediums for a paper in the search results as images	Provide Short Cuts	x	
3.3	Help message in form is lack of information	Speak the User's Language		X
3.4	Help messages in form help a user determine what information is relevant for their submission		х	

4.1	Lack of login information	Provide Feedback, Speak the user's language		X
4.2	Display of code in the User History section	Speak the user's language		X
4.3	Issue of password confirmation & email modification	Provide Feedback, Speak the user's language, Mini- mize user memory load		X
4.4	Straightforward user profile	Provide Shortcuts	X	
5.1	Help button for some form items does not display text	Be Consistent		X
5.2	Allowing user to save their deposit information and return before submitting	Provide Shortcuts	x	
5.3	Recommended author has multiple duplicate values	Prevent Errors		X
5.4	Confirmation of item being deposited	Provide Feedback	X	
5.5	Use of green checkmark and yellow warning triangle	Speak the User's Language	X	
5.6	Provide alert information at the beginning of deposit process		х	

## **About Home page:**

#### HE 1.1 -- Good Feature

#### Name

Minimalist layout design for the home page.

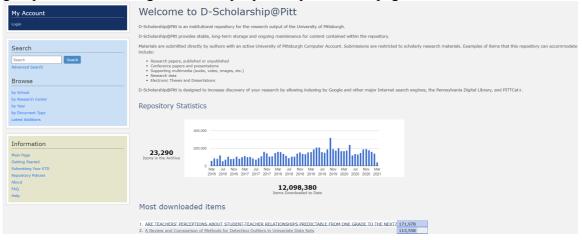
#### **Evidence**

Heuristic: Simple and Natural Dialog, Speak the user's language

The home page is clearly separated into four parts, such as the login and deposit section, search and browse section, information section, and data analysis dashboard section.

#### **Explanation**

Use cards with different colors to focus user attention on different kinds of functions. It groups related tasks together to simplify the layout of this page.



## **Benefit**

Users can directly find the functions they want in specific sections. The minimalist design provides simple dialog and directions as a home page.

## **Trade-offs**

The functions of this system are limited so that the layout could be displayed simply. If much more features added to this system, the layout design would need to be more careful.

## **Submitted By**

Sichen Ma

#### HE 1.2 -- Problem

#### Name

Font size is too small.

#### **Evidence**

Heuristic: Speak the User's Language



## **Explanation**

Some of the users in this website might be old professors. As the old, the font size is too small to read, especially in search result part. For people with bad vision, they might feel uncomfortable when using this website for a long time.

#### **Possible Solution**

Increasing the font size appropriately based on user survey or experiences from other popular websites.

## **Trade-offs**

Larger size of font will affect the number of display results especially for the search result page. It will lead to more pages for results.

## **Submitted By**

Sichen Ma

### HE 1.3 -- Problem

#### Name

Can't return to the homepage from other parts of the website.

#### **Evidence**

Heuristic: Be Consistent, Provide Shortcuts

After users logged in their account, there is no way to get back to main page(home) in this system.

## **Explanation**

The same button/link should play the same function as always. The "Main Page" link should always as a button used for return to home page no matter the status of user.

#### **Possible Solution**

Maintain the main page link to "home page" even though the user status is already logged in. Or make another button on the page functioned as a link to the home page.

# **Trade-offs**

The navigation logic in this system might have a big change.

## **Submitted By**

Kacey Hirth, Sichen Ma, Sandeep Mysore

#### HE 1.4 -- Problem

#### Name

Use of uncommon acronyms without explanation.

#### **Evidence**

Heuristic: Speak the user language.

Use of acronym (ETD) without explanation of what that means (Electronic Thesis and Dissertation.

## **Explanation**

It's common practice to define an acronym the first time it is used in an application. The "Submit your ETD" page does not describe the meaning of ETD. It is important to not assume the user of the website has knowledge of lesser known acronyms it would be beneficial to the reader to have the acronym defined the first time it is used.

#### **Possible Solution**

It would be beneficial to the reader to have the acronym defined the first time it is used.

## **Trade-offs**

Having the acronym described in the sidebar increases the length of the navigation item

## **Submitted By**

Kacey Hirth, Sandeep Mysore

#### HE 1.5 -- Problem

#### Name

No way to cancel loading of most downloaded papers

#### **Evidence**

Heuristic: Provide clearly marked exits

48. Race and Gender in the Broadway Chorus

49. An Examination of Playwright Maria Irene Fornes Through the Practical Application of Directir

50. Addressing Childhood Obesity Through School-based Prevention Programs

10 25 50 all



## **Explanation**

Loading all papers in the "Most Downloaded" section takes several minutes, and the user is given no obvious way to cancel out of this. Additionally, once all papers are loaded the page becomes very long.

#### **Possible Solution**

Including a cancel button for the request would allow the user more control of the process. Additionally, only loading a set number of papers at a time and allowing the user to page through them would lower the loading time.

## **Trade-offs**

If a user wanted to compare downloads of the top most downloaded pages and the bottom most they would have to flip through many different pages instead of scrolling.

## **Submitted By**

#### HE 1.6 -- Good Feature

### **Name**

Form Staging

### **Evidence**

Heuristic: Simple and Natural Dialog, Minimize User Memory Load

## **Explanation**

The forms are split into stages, each of which addresses a category. For example, the above evidence shows the break up of the form into subsections. The first takes in details about the type of document. The second on the details, and so on.

## **Benefit**

It is beneficial to have relevant category of form input fields together to aid in faster completion and to have contextual relevance to the system.

# **Submitted By**

Sandeep Mysore

#### **About Browse:**

#### HE 2.1 -- Problem

#### Name

Browse papers by different categories with long list

#### **Evidence**

Heuristic: Simple and natural dialog

#### Browse by Research Center

- University Centers, Institutes, and Research Centers (4639) o Other Centers, Institutes, Offices, or Units (4287)

  - Allegheny Observatory (4) Alzheimer's Disease Research Center (9)
     Arthritis Institute (5)
     Asian Studies Center (8)

  - Resian Studies Center (8)
     Center for Aging and Population Health (4)
     Center for American Music (2)
     Center for Assistive Technology (2)
     Center for Bioengineering (4)
     Center for Bioengineering (4)
     Center for Biologic Imaging (14)
     Center for Biologic Imaging (14)
     Center for Biomedical Informatics (4)
     Center for Clinical Bharmacology (5)

  - Center for Clinical Pharmacology (5)
     Center for Comparative Archaeology (42)
     Center for Craniofacial and Dental Genetics (7)
     Center for Dental Informatics (89)

  - Center for Energy (7)
     Center for Environmental and Occupational Health (5)
     Center for Global Health (6)

  - Center for Industry Studies (16)
     Center for LGBT Health Research (88)
     Center for Latin American Studies (55)
  - Center for Molecular and Materials Simulations (38)
  - Center for Neuroscience (13)
     Center for Public Health Practi

## **Explanation**

In the browse page, there are many links.

## **Severity**

Sever. Users need to browse carefully to find what they want.

## Possible Solution

Change to the expand and compress UI. So that the categories could be clearer.

## **Relationships**

HE2.3: Level tree

## **Submitted By**

Sichen Ma, Xiya Liu

#### **HE 2.2 -- Good Feature**

#### **Name**

Brower papers by different categories

#### **Evidence**

Heuristic: Provide Shortcuts, Be Consistent

```
Please select a value to browse from the list below.

- 2022 (132)
- 2020 (834)
- 2030 (894)
- 2031 (896)
- 2031 (1956)
- 2031 (1966)
- 2031 (1976)
- 2031 (1976)
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- 2031 (
```

## **Explanation**

For browse section, there are basically five categories, by school, by research center, by year, by document type and by latest additions. The categories are comprehensive for users and the subsets under each category are clear. For each category, the subsets are straightforward. Take "Browse By Year" as an example, it provide all possible years and number of papers under which year.

#### **Benefit**

User can directly browse by categories designed in this system. The shortcuts save more time on searching, users can find what they want by browsing.

## **Trade-offs**

The categories might need to update by years. It will be a huge work for people to update all the categories on time.

## **Submitted By**

Sichen Ma

### HE 2.3 -- Good Feature

#### **Name**

Level tree

#### **Evidence**

Heuristic: Minimize User Memory Load, Be Consistent, Provide clearly marked exits

```
| Schools and programs (36)
| Dietrich School of Arts and Sciences (36)
| Bioethics (36)

| Please select a value to browse from the list below.

| 2020 (2)
| 2019 (5)
| 2017 (2)
| 2015 (4)
| 2014 (4)
| 2013 (2)
| 2013 (2)
| 2011 (3)
| 2012 (2)
| 2011 (3)
| 2009 (2)
| 2009 (3)
| 2009 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
| 2000 (1)
```

## **Explanation**

When users browse by schools, and click any one of the links, it would show the levels always.

#### **Benefit**

Users could know which level they are in when browsing. And they could turn back easily by clicking the upper levels.

# **Relationships**

HE2.1: Browse papers by different categories with long list

## **Submitted By**

Xiya Liu

#### HE 2.4 -- Good Feature

#### **Name**

Two re-search ways

### **Evidence**

Heuristic: Minimize user memory load

Search has no matches.

Refine search | New search

Order the results: by relevance match

Reorder

## **Explanation**

Users could refine search or create a new search. Refine search would fill the form as the user filled automatically, which new search would give user a new blank advanced search form.

#### **Benefit**

Users could decide to create a new search or just edit the past search.

## **Submitted By**

Xiya Liu

## HE 2.5 -- Good Feature

### **Name**

Advanced search error report

#### **Evidence**

Heuristic: Good error messages

Advanced Search



You need to specify something for at least one field!

#### **Explanation**

If users do not enter any of the advanced search fields, the error report would appear and notice users.

#### **Benefit**

By the error report, users know what the error is and how to solve it.

## **Trade-offs**

It needs to submit and then show the error message. If there is a notification showing before submitting the error message could avoid.

## **Submitted By**

Xiya Liu

#### **About Search:**

#### HE 3.1 -- Good Feature

### **Name**

Action buttons always on the screen obviously.

#### **Evidence**

Heuristic: Minimize User Memory Load, Be Consistent



## **Explanation**

When users get thousands of searching results based on their keywords, the paginations are always on the screen and be able to do many other actions.

The action buttons put on both top and bottom of the pages, especially for searching results page. Besides that, there are two pages might list amounts of information. One is the searching result page; another one is advanced search page. The pagination bar or submit buttons are always on the screen during browsing or filling.

## **Benefit**

Users can easily find the buttons on the page to consider the next action they want.

## **Trade-offs**

A more saving space way is that give a "scroll to bottom" float button.

## **Submitted By**

Sichen Ma, Xiya Liu

#### HE 3.2 -- Good Feature

#### **Name**

Showing available mediums for a paper in the search results as images

#### **Evidence**

**Heuristic:** Provide Shortcuts

 Corrall, Sheila (2015) <u>The Open Movement in Higher Education.</u> In: ULS/iSchool Workshop & Lecture Series / Open Access Week 2015, University of Pittsburgh, Pittsburgh, PA. (Unpublished)



#### -----

## **Explanation**

The user is able to click on the images on the left hand side of the shortcuts to access the paper in that format. In the example above the user can click on the film reel file to access a video presentation of the lecture or they can click the pdf file image to access a pdf version of the paper.

## **Benefit**

Visual information allows the user to quickly identify the different formats the paper is available, and allows the user to access without reading additional text.

## **Trade-offs**

Multiple PDF's are sometimes listed, so users may have to click on multiple images to find the pdf they are looking for.

## **Submitted By**

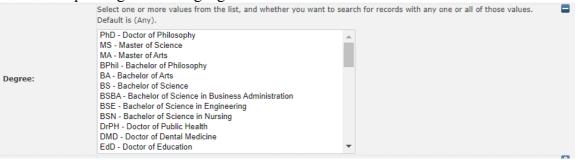
#### HE 3.3 -- Problem

### **Name**

Help message in form is lack of information

#### **Evidence**

Heuristic: Speaking User's language



## **Explanation**

Users are able to select more values from the list but don't know how to achieve it.

## **Severity**

Moderate. Some users would know they could press ctrl or shift to multiple select. But for the users who do not know, it could be a problem.

## **Possible Solution**

Use check box to allow users to multiple select

## **Submitted By**

Sichen Ma, Xiya Liu

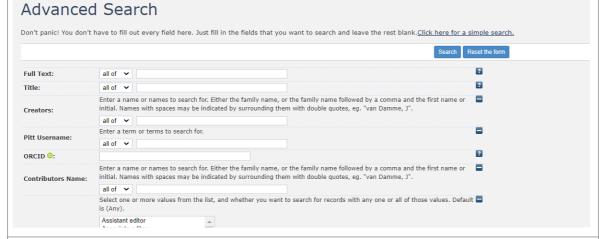
#### HE 3.4 -- Good Feature

#### Name

Help messages in form help a user determine what information is relevant for their submission

#### **Evidence**

Heuristic: Speak the User's Language, Minimize User Memory Load, Be Consistent



## **Explanation**

There is a help button for each field in the advanced search field. Users could have brief introduction to help them fill the form for their submission.

## **Benefit**

These help messages minimize user's memory to fill this long form. User can find out solution by clicking on the help button.

## **Trade-offs**

The messages for each field should speak user's language to help them fill precisely. This form has more than 20 fields, the description of message are important as well. But many explanations are the same, could be more specific or merge them.

## **Submitted By**

Sichen Ma, Sandeep Mysore, Xiya Liu

#### **About Login, Profile, Logout:**

#### HE 4.1 -- Problem

#### Name

Lack of login information

#### **Evidence**

Heuristic: Feedback/Speak the user's language

when a user tries to login a system, they may be confused what it is supposed to be with username and account.

Login	
Please enter your username and password.	
	Username: Password: Login
Note: you must have cookies enabled.	

## **Explanation**

For a user who is not familiar with this system, it is hard to figure out that the account information is exactly as the same as the Pitt account. Furthermore, in the login form, they don't provide any login support.

## **Severity**

It is considered as moderate. A user may not be happy because it stops them from using further features from the system at the very beginning.

## **Possible Solution**

The form should at least provide the login instruction or the account's information

## **Submitted By**

Shuo-Yuan, Chang

#### HE 4.2 -- Problem

#### Name

Confusing display of code in user profile.

# **Evidence**

Heuristic: Speak the user language

When a user tries to check their User history, they find XML format of user history. It is hard to read if a user is not in the field of science.

## **Explanation**

User history is supposed to be something that provides straightforward information for a user. Furthermore, in this form, it is hard to recognize the content of "user history". Is it the login of user history or deposit submission of use history?

## **Severity**

It is considered as serious. A user couldn't retrieve the exact information from the form

## **Possible Solution**

They should redesign this form. And, what is user history exactly about?

## **Submitted By**

Shuo-Yuan, Chang, Sandeep Mysore

## HE 4.3 -- Problem

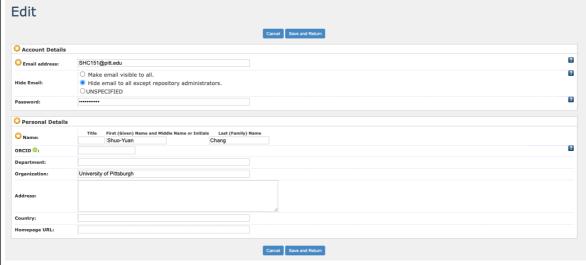
#### Name

The issue of password confirmation & email modification

#### **Evidence**

Heuristic: Feedback/Speak the user's language/ Minimize user memory load In this form, a user has a possibility to change their email information.

When it comes to password modification, they don't provide password confirmation.



## **Explanation**

In the login page, the form doesn't provide the "forget password" option. What if the user changed their email and lost this information, users may not be able to get their account back. without the help of password confirmation, it can be a problem of typing the wrong password.

## **Severity**

It is considered as serious, there are a lot of potential issues if the instruction is not addressed.

## **Possible Solution**

Highly recommend that the system should redesign user management.

## **Submitted By**

Shuo-Yuan, Chang, Sandeep Mysore

#### HE 4.4 -- Good Feature

#### **Name**

A straightforward user profile

#### **Evidence**

Heuristic: Provide Shortcuts

Every important key word such as detail and user history is very obvious to find.



## **Explanation**

As a user, the simpler the form is, the better. Additionally, when you click the title on the left, it directly goes to the edit form. It helps users access the profile with ease.

## **Benefit**

Provide the easier solution for user to edit their profile

## **Trade-offs**

Advanced users may be confused by a title link and edit button. Also, some of the titles have a link but some do not. It is not uniform in a sense.

## **Submitted By**

Shuo-Yuan, Chang

## **About Deposit Submission:**

# HE5.1 -- Problem Name Help button for some form items does not display text Evidence Heuristic: Be Consistent Article Type Help Ounspecified Commentary Correspondence/Letter

## **Explanation**

Each input field when entering a new deposit has a question mark button that allows the user to see a description of the input field with examples. For some input fields such as "Article Type" the user is only presented with the word "Help". If there is a help button it should be usable.

#### **Severity:**

Low: Most items that are lacking help descriptions are self-evident

## **Possible Solution**

The addition of a description for "Article Type" as well as providing an example would make the form more consistent.

## **Submitted By**

#### **HE5.2** -- Good Feature

#### **Name**

Allowing user to save their deposit information and return before submitting

#### **Evidence**

Heuristic: Provide Shortcuts



## **Explanation**

Entering a new deposit requires a lot of different sources. A user may only get half-way through a deposit and then have to stop. The D-Scholarship system allows the user to save their work and come back.

#### **Benefit**

This allows the user to not have to re-type as much information when returning to finish a submission of a paper.

#### **Trade-offs**

The user has to click the "Save and Return" button at the bottom of the form. There is not Auto-save which could be implemented as the user progresses through the form sections.

## **Submitted By**

Kacey Hirth, Sandeep Mysore

#### HE5.3 -- Problem

#### Name

Recommended author has multiple duplicate values

#### **Evidence**

Heuristic: Prevent errors

Brusilovsky, P PETERB (author of 107 items in this repository)

Brusilovsky, Peter PETERB (author of 42 items in this repository)

Brusilovsky, Peter peterb (author of 3 items in this repository)

Brusilovsky, Peter peterb (author of 2 items in this repository)

Brusilovsky, Alexandra (author of 1 item in this repository)

Brusilovsky, PL PETERB (author of 1 item in this repository)

Brusilovsky, Peter peterb (author of 1 item in this repository)

Brusilovsky, Peter (author of 1 item in this repository)

#### **Explanation**

The author recommendation often shows variations of an author's name. Often to do with the capitalization of the name. In the case above there are seven different entries for Peter Brusilovsky. In this case the system might have different statistics about each.

## **Severity**

High: This could potentially high severity issue depending on how the data is used. For instance one might incorrectly determine that Peter Brusilovsky has only authored 107 items, when actuality he has authored 157 different items in the system

## **Possible Solution**

Data cleaning would need to be done in the backend, as well as creating a name format so that different capitalizations of the same name are stored as the same author.

## **Submitted By**

#### **HE5.4** -- Good Feature

#### Name

Confirmation message of item being deposited

#### **Evidence**

Heuristic: Provide Feedback



Item has been deposited.



Your item will not appear on the public website until it has been checked by an editor.

## **Explanation**

It is important that the user is given feedback when an action is taken. The message with the checkmark that is displayed clearly reads to the user that their deposit has been successful, and that their item will not appear until it has been checked by an editor. Additionally, the message below explains that the website will not appear until it has be checked by an editor

#### **Benefit**

These messages confirm to the user that the system has received their input, as well as explaining that the change won't be reflected until it has been checked by an editor

## Relationship

5.6: These features work together to quickly allow the user to confirm that their deposit has been successful and what to look out for next

## **Submitted By**

#### HE5.5 -- Good Feature

#### **Name**

Use of green checkmark and yellow warning triangle

#### **Evidence**

Heuristic: Speak the User's Language



Item has been deposited.



Your item will not appear on the public website until it has been checked by an editor.

## **Explanation**

The green checkmark is a common symbol to represent an action has been successful. Additionally, the yellow warning triangle is a common symbol to notify the reader that the text is important.

#### **Benefit**

These symbols allow the reader to quickly understand that the submission has been successful as well as draw the readers attention to the warning message.

## Relationship

5.5: These features work together to quickly allow the user to confirm that their deposit has been successful and what to look out for next

## **Submitted By**

#### **HE5.6** -- Good Feature

#### **Name**

Provide alert information at the beginning of deposit process

#### **Evidence**

Heuristic: Prevent Errors, Good Error Messages



## **Explanation**

The system provides some requirements at the very beginning of the deposit process and provide solution to user when they face difficulty on deposit the item.

#### **Benefit**

Users will understand what they are doing and information they might not noticed before starting the deposit process.

## **Trade-offs**

The sentences are too long to read and understand as a user. In the sentences, there are several links need to click while reading.

## **Submitted By**

Sichen Ma

# **Summary**

Overall, we found the website well laid out and easy to understand. The basic features of the website are for submission of deposits and the search of these deposits. Both of these functions provide minimal interfaces with simple layouts that are easy to use.

In total we identified and prepared twenty-four different UAR for the D-Scholarship@Pitt system. Eleven of the twenty-four UAR correspond to design problems discovered in the system. The most severe issues were related to preventing input errors in the submission deposit, being able to change the user's email while not being able to recover the password, and not being able to navigate back to the homepage from certain parts of the website. The other issues were less severe and related to flaws that may cause inconvenience to the user. We also documented thirteen beneficial features to the system that determined features of the website that are working well.