

Evaluating the usability of the Irish Virtual Research

Library and Archive

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Abstract

This paper describes a usability study that was carried out to evaluate how well the UCD Irish Virtual Research Library and Archive (IVRLA) Version 1.0 meets its users' requirements. The study concentrated on addressing the basic functionality of IVRLA Version 1.0, but touched upon the added-value function of social bookmarking and the requirements of Irish language users.

IVRLA

The Irish Virtual Research Library and Archive (IVRLA) is a major digitisation and digital object management project. It was launched at UCD Dublin in January 2005 and is currently scheduled to run for five years [1]. The IVRLA was conceived as a means of preserving and facilitating access to a range of textual, graphical and multimedia materials held in UCD's main repositories. It also aims to "advance the research agenda into the use and challenges affecting digital primary source repositories .. [and] digital curation over the coming years" [2].

As of April 2009, material from the following repositories has been digitised and is available via IVRLA Version 1.0:

- UCD Delargy Centre for Irish Folklore and the National Folklore Collection
- Irish Dialect Archive
- UCD Archives
- UCD Library Special Collections
- UCD Mícheál Ó Cléirigh Institute for the Study of Irish History and Civilisation

IVRLA 1.0, enables users to browse, search, tag and cite digital objects, as well as view or download them in a variety of file formats.

Search options

The IVRLA GUI allows users to search the collections in three ways, as illustrated in Figures 1, 2 and 3.



Fig. 1 – “Search All Collections” Function on IVRLA Main page

[Collection Browse](#) | [Quick Search](#) | [Detailed Search](#)

Search for:

in:

- All Collections
- 19th century Pamphlets
- Beranger Watercolours
- Curran Collection - Photographs
- Historic Maps
- Irish Dialect Archive - Manuscripts
- Irish Dialect Archive - Card Catalogue
- Ó Cléirigh Institute - Monographs
- Ó Lochlainn Collection - Ballads
- Papers of William Frazer
- Papers of Eugene O'Curry
- Questionnaire: Emigration to America
- Questionnaire: Tinkers [Travellers]
- The Beckett Country Collection

Resource Type: All

Figure 2 – Quick search



[Home](#) | [Search/Browse](#) | [Help](#)

[Collection Browse](#) | [Quick Search](#) | [Detailed Search](#)

Search

Enter Search terms and select index types. Indicate choice of Boolean operators.

in Full Bibliographic Record - Limit by Rule - AND

in Full Bibliographic Record (optional) AND

in Full Bibliographic Record

Subject Browse

Select a Subject Heading from one of the following:

Limit By

Limit your Search or Subject Browse by:

Institution

Repository

Collection

Language

Resource Type

Genre

Figure 3: Detailed search

The simplest search option, illustrated in Figure 1, comprises a search box. This option, referred hereto as the “Search All Collections” feature, appears at the top of every page.

The “Quick Search” option, illustrated in Figure 2, provides a similar search experience but also allows users to narrow their search by selecting a specific collection or resource format (such as text, still image or sound recording).

“Detailed search”, shown in Figure 3, allows users to select index types, indicate Boolean operators, and to limit searches by a number of fields including institution, repository and collection. It also allows users to browse the contents of IVRLA by subjects, names, places or titles.

Usability Testing

Usability refers to “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use” [3]. Usability testing is fast becoming a central component in the design and evaluation of software such as digital libraries (Jung *et al.*, 2008; George, 2008, Long *et al.*, 2005; Norberg *et al.*, 2005). Such testing involves representative users attempting realistic tasks using the system under test. The users are generally asked to think out loud while completing the tasks. Observation and note-taking by a facilitator, accompanied by video recording, is generally found to produce the best results. Such a usability study provides researchers with a mental model of a participant’s use of a system, as well as providing a better understanding of how

the system works (Clark, 2004; George, 2005; George, 2008; King & Jannik, 2005; Norberg & Vassiliadis, 2005; Turnbow et al., 2005; Tolliver et al., 2005) When compared with other methods of assessing software, usability testing has been found to be effective and efficient. For example, Ahmed (2008) found usability testing using actual users found a higher percentage of problems than testing using heuristic evaluation or cognitive walkthrough.

In a widely cited article, Nielsen (2000) states that “the best results come from testing no more than five users”. Typically, a single user will identify one third of the problems in a piece of software. Testing with more than five users can be a waste of time as the same issues may be observed without much new being learned about the system (Nielsen, 2000). Krug (2006) believes that three or four users are an adequate number for each round of testing.

The IVRLA Version 1.0 Usability Test

Once pilot testing had been successfully completed, the usability testing of IVRLA Version 1.0 was carried out over two days in the Summer of 2008. Following Krug’s advice (2006) concerning numbers of testers, four history researchers were enrolled to perform the tests. In addition, two Irish language researchers were also invited to participate to ensure a conclusive test of Irish language functionality.

For each of the six participants, a short pre-usability test questionnaire was used to gather demographic information relating to occupation, internet usage and knowledge of digital resources. Participants were then given some background information on the IVRLA. In an adaptation of a test script by Krug (2006), the facilitator then outlined what was required of participants, emphasising that the purpose of the usability test was to test the system and not

the participants. The latter were encouraged to say exactly what they thought of the IVRLA and to “think out loud” as much as possible. They were told that they could ask questions during the test but that the facilitator might choose not to answer some questions until after the test was complete. The participants were asked to sign a release form giving permission for the test session to be used for research purposes. Finally, they were asked if they had any questions before the test began.

Following Krug’s (2006) guidelines, the usability test was divided into two sections: “get it” tests and key task testing. As the name implies, “get it” testing aims to determine whether participants understand the purpose and structure of the site they are testing. Participants were asked to take a moment to review the IVRLA Welcome page, to comment on any features they liked or disliked and to give their general impression of the page.

Key Task Testing

The key task testing involved the completion of five separate tasks. A different set of tasks were provided for the history and Irish language researchers. The tasks developed for both user groups were evaluating identical features but the required searches differed to reflect the research backgrounds of the testers.

The IVRLA collection comprises English and Irish language material. Although it is intended to further develop Irish language functionality for the IVRLA user interface, at present, none exists. Instead, the Irish language researchers were given tasks relating to Irish language digital objects within the IVRLA and asked to comment on the level of Irish language functionality they would like to see incorporated in the user interface.

1. Basic Functionality of IVRLA

One of the study's research questions was to what extent the basic functionality of the IVRLA user interface was meeting user requirements. To address this question, the usability tests focused on three areas of the IVRLA user interface: the search function, viewing digital objects and citing information from the IVRLA.

i) Search options

The first two tasks focused on the usability of the Quick and Detailed search options.

Tasks 1 and 2 as completed by History researchers:

1. Imagine you want to find a letter written by Sir Roger Casement to Robert Donovan.

Do a search and look at the results.

2. Imagine you want to find a letter written by Matthew Dawes to Eugene O. Curry concerning his genealogical research into the Corr family. Use the **detailed search** to run a query using this information and look at the results.

Tasks 1 and 2 as completed by Irish language researchers:

1. Imagine you want to find a letter written by Tomás de Bhaldraithe to Miss Fionnuala Duane. Do a search and look at the results.

2. Imagine you want to find a letter from Marion Gunn to Fionnuala Duane containing information about correspondence between Cornelius Duane and Seán Ó Dalaigh.

Use the **detailed search** to run a query using this information and look at the results.

ii) Viewing digital objects

IVRLA Version 1.0 makes digital images available in DjVu and JPEG formats. The aim of Task 3 was to explore the provision and use of these formats.

Task 3 as completed by History researchers:

Find a photograph of James Joyce as a boy. Now imagine you want to view the larger digital image of the photograph and then save the digital image of the photograph to your desktop.

Try and do this now.

Task 3 as completed by Irish Language researchers:

Find the item entitled Toradh Ceistiúcháin ar Na Tíncéirí, Cúige Laighean. Now imagine you want to view the larger digital image and then save the digital image to your desktop. Try and do this now.

iii) Citing Information

To aid researchers in creating citations and to provide them with a permanent link to IVRLA materials, a Digital Object Identifier (DOI) is provided for each item held, as illustrated in Figure 4. Task 4 was designed to investigate whether or not participants were able to identify a DOI provided by the IVRLA and use it in creating a citation.

Task 4 as completed by History researchers:

Search for an item relating to the Ancient Foundling Hospital in Dublin. Look at your results. Select one of the items you have found. Now imagine that you are going to use this document in your research and you want to create a citation. How would you do this?

Task 4 as completed by Irish language researchers:

Search for a questionnaire response by Seán Ó Dúbhda, Carraig, Ballynagall, Dingle, Co. Kerry. Look at your results. Select one of the items you have found. Now imagine that you are going to use this document in your research and you want to create a citation. How would you do this?



Figure 4: the Digital Object Identifier (DOI)

2. Added-value Functionality

Another of the study's research questions was how effective the added-value function of social bookmarking was in meeting user requirements. Thus, the final task concentrated on testing the use of the Delicious bookmarking tool in the IURLA, as illustrated in Figure 5.

Task 5 as completed by History researchers:

From the COLLECTION BROWSE page select the papers of William Frazer. You do not have time to complete your search but you would like to return to view this collection again. Bookmark this page using the Delicious bookmarking tool.

Task 5 as completed by Irish language researchers:

From the COLLECTION BROWSE page select the Irish Dialect Archive Card Catalogue. You do not have time to complete your search but you would like to return to view this collection again. Bookmark this page using the Delicious bookmarking tool.



Figure 5: Bookmarking a page using Delicious

Results of Usability Testing

Search

Throughout the usability test, unless otherwise requested, participants only used the Search All Collections option. None of the participants chose to use either the Detailed Search or the Quick Search option. Participants indicated during the test and in the pre-study questionnaire that they found detailed searching or Boolean searching confusing and preferred a simple

search function similar to that used in commercial search engines. This is not an uncommon finding. Miller (2004) summarises the phenomenon well:

“Google Scholar has taught us, quite powerfully, that the user just wants a search box. Arguments as to whether or not this is “best” for the user are moot – it doesn’t matter if it’s best if nobody uses it.”

During the test, it appeared that, once users had noticed the Search All Collections option, they ignored the other options. Further testing would be required to determine whether users can optimally achieve all of their search goals using only this simple form of search or whether more advanced search options are necessary. If the latter is the case, it might be appropriate to discourage users from immediately choosing the simplest search option. This could be done by removing the Search All Collections option from the IVRLA Main page, thus forcing users to begin their search from the page offering Quick and Detailed options. The Search All Collections option could remain available at the top of all other pages, giving users a subsequent choice of using it or navigating back to the page offering more advanced search features.

As part of the pre-usability test questionnaire, two participants had indicated that Google Scholar was their preferred digital resource, stating that it was “quick” and had “links to everything”. Another participant selected Irish History Online as their preferred digital resource as it provided “easy access to primary sources”. Both Google Scholar (Figure 6) and Irish History Online (Figure 7) provide users with the ability to conduct an advanced search. However, their advanced search options are both kept to a minimum, giving users a total of nine search options to choose from. In comparison, the Detailed Search function of the

IVRLA allows users to insert three search terms and select corresponding Boolean operators for each. It also provides six different drop-down menus, which allow users to limit the search, and also a subject browse option where users can search under the options of All Subjects, Names, Places and Titles. Furthermore, the layout of Google Scholar and Irish History Online appears in a linear fashion, one option below the other, whereas the options in the IVRLA Detailed Search are laid out horizontally as well as vertically.

If the Detailed Search function of the IVRLA appeared simpler and more familiar to that of other digital collections commonly used by members of the IVRLA user community, it might be more widely used. One possible step in this process would be to amalgamate the Search function and the Subject Browse function. In addition, Boolean search operators could be replaced by the option to select a search term from a prescribed list including Author or Name, Place, Title and All Subjects. Furthermore, the Limit By function could be moved from its current position, to right of the Search function, and be placed below the search boxes so that all search functions appear in linear form.

Google Scholar Advanced Scholar Search [Advanced Search Tips](#) | [About Google Scholar](#)

Find articles with all of the words
with the exact phrase
with at least one of the words
without the words
where my words occur

10 results

Author Return articles written by
e.g. "P.J. Hayes" or McCarthy

Publication Return articles published in
e.g. J Biol Chem or Nature

Date Return articles published between -
e.g. 1990

Subject Areas Return articles in all subject areas.
 Return only articles in the following subject areas:

- Biology, Life Sciences, and Environmental Science
- Business, Administration, Finance, and Economics
- Chemistry and Materials Science
- Engineering, Computer Science, and Mathematics
- Medicine, Pharmacology, and Veterinary Science
- Physics, Astronomy, and Planetary Science
- Social Sciences, Arts, and Humanities

Figure 6: Google Scholar Advanced Search Option.

Irish History Online

Full search: You can fill as many fields as you like from either or both parts of the form and you can click on the **index** buttons to help you choose terms. For help, click [here](#), or on the  button next to each field.

For **additional options**, move to the [Search Builder](#).

Bibliographic criteria:

Author name e.g. 'Postan, M' or select from index 

Title contains word(s) beginning with 

Journal or series begins with 

Restrict by date of publication specify a range in years from to 

Subject criteria:

Subject (free text) contains word(s) beginning with 

Subject classification  term must match index 

Place index  begins with 

Person as subject  e.g. 'Disraeli, B' or select from index 

Restrict by period covered  specify a range in years from to 

Close matches only

Figure 7: Irish History Online Advanced Search Option.

Viewing digital objects

Task three required participants to find an item in the IVRLA, open the digital image and save it to the desktop of the computer. Despite having been introduced to the Welcome page that contained instructions for downloading the DjVu plugin, none of the participants realised that they should use this plug-in to complete the task. One participant opened the JPEG version of the item; the other five saved the item's thumbnail. After participants had been shown the DjVu plug-in link, they were asked to download the plug-in and attempt the task again. Three participants stated that this was the hardest task in the test and that the plug-in download process was confusing.

It is a widely perceived in web design circles that users do not like having to download software. In the case of the IVRLA, a balance has to be struck between the level of frustration due to the download requirement and the provision of high quality images. It should be noted that, once the download process was complete and participants began to view digital objects using DjVu, they were immediately impressed by the visual quality of the digital objects. Given this, the only solution appears to be for the IVRLA website to place greater emphasis on the importance and benefits of downloading the DjVu plug-in.

Citing Information

None of the six participants used the DOI provided by the IVRLA in creating their citation.

Four participants indicated that they would reference the IVRLA URL when creating a reference.

When the DOI was pointed out and its purpose explained, participants suggested that it be made more noticeable. A more vibrant colour might assist in this regard. The IVRLA help page provides information on DOIs; a link from each DOI to this information would be useful.

Added-value Functionality

In Task 5, participants were able to locate the Delicious link on the IVRLA web site without any difficulty. None of the participants had Delicious accounts so they were asked to create one. This involves creating a username, adding Delicious shortcut buttons and importing bookmarks from a web browser. When creating an account, four participants chose not to install the Delicious shortcut buttons. This was problematic because the Delicious icon does not appear on the page of each digital object within the IVRLA but only on the Content and Structure and Collection Description pages. As a result, if a user does not install the Delicious

shortcut buttons in their browser, they are restricted in the degree of bookmarking that they can carry out in the IVRLA.

From the pre-usability test questionnaire, it was determined that none of the participants had previous experience of using social bookmarking tools. The IVRLA Delicious feature will only be of use to researchers if they are prepared to use Delicious as a core online research technique. Thus, the real usefulness of such a feature will depend on future adoption of tagging technology within the Arts and Humanities research community.

Bilingual Functionality

Pavani (2001) outlines three language control parameters that can be implemented in a multilingual digital library: language of content, language of catalogue entry and language of navigation. Both Irish language researchers stated that, when searching for Irish material within a digital collection, they expect all three of these parameters to use Irish. Caccamo (2006) recommends the development of an Irish language version of the IVRLA user interface, to be offered in tandem with the English language version. She cites the bilingual user interface to The National Library of Wales online resources [4] as an example of how two languages can be incorporated successfully. The Digital Humanities Observatory (DHO) [5] was established to coordinate the collaborative development of humanities computing in Ireland. It could play a key role in providing advice on how best to tackle the issue of developing a bilingual user interface in a standards-compliant way.

One possible method of achieving the aim of Irish language metadata would be to encourage volunteers to submit Irish language translations of metadata. This method has been used

successfully in the development of the International Children's Digital Library (Hutchinson et al., 2005).

Conclusion

The main focus of IVRLA Version 1.0 is to provide basic functionality such as searching and viewing of digital content for users. The next major redesign of the IVRLA user interface will focus on developing added-value functionality beyond the use of simple Delicious tagging. This will include the provision of user accounts and the ability for users to build personal virtual collections (Drohan, 2008). There are also plans to investigate interoperability with e-learning tools and Virtual Learning Environments. Future usability testing is likely to concentrate on these aspects.

The usability tests described in this article concentrated on evaluating the basic functionality of the IVRLA. The results of the tests point to some of the potential ways in which the user experience of the IVRLA can be improved, thus further facilitating access to its unique and valuable collections.

Notes

[1] The IVRLA is a component of the Humanities Institute of Ireland (HII) and is funded by the Programme for Research in Third Level Institutions (PRTL) Phase 3.

[2] IVRLA: <http://ivrla.ucd.ie>

[3] Usability Net: International standards for HCI and usability:

http://www.usabilitynet.org/tools/r_international.htm

[4] The National Library of Wales: <http://www.llgc.org.uk>

[5] Digital Humanities Observatory: <http://www.dho.ie/>

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