EVALUATION OF FEW WEB-BASED E-BOOK PORTALS

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Abstract

This study aims to present the evaluation of the following e-portals providing access to e-books: Elsevier ScienceDirect, Project Gutenberg, Digital Library of India, University of Virginia Library (E-Text Center) and Bartleby.com, using twenty selected parameters. Many differences as well as some similarities were found and these are analyzed in detail and presented in tabular form.

Keywords: E-Books, Portals, Evaluation, Search Facilities, Search Fields, User Interface

1. Introduction

The present study presents the finding of evaluation of five web-based portals, offering access to e-books. Portals studied were Elsevier ScienceDirect, Project Gutenberg, Digital Library of India, University of Virginia Library (E-Text Center) and Bartleby.com. This study was intended to provide a framework for evaluating various features of the e-book portals, basing earlier studies [2, 4, 7, 9]. We also attempted to compare the search facilities and search fields available in the studied portals. The portals studied other than that of Elsevier are accessible free of cost, whereas all might be expected to follow certain design standards and guidelines [9].

Internet (net or web) has gained popularity for finding any kind of information on any branch of knowledge. Information industry has slowly taken advantage of this shift from a paper-based to electronic media, widely due to the rapid and strong impact of Information Communication Technologies (ICT) available to create, host and access full text electronic information resources. Thrilled with the success of e-journal operations of web, publishers are slowly but steadily working on products, solutions and access models to disseminate e-books. This has become easier now because they use digital tools and techniques nowadays to publish even printed books. Publishers also face competition to venture into e-book solutions from free e-book providers, institutions and authors disseminating content on the web to the wide use of users interested in such content. Such increased presence of e-book resources on web calls for proper evaluation of these to determine its quality and usefulness [3, 10].

Each of criteria selected has been applied to all the chosen portals and outcomes are presented in a tabular format. Results are organized in a sequence like, criteria and its identified results from the portal concerned. Search fields and search facilities available and its comparison are also presented in tabular form. Lastly the findings of the whole study are presented.

2. Portals under study

The authors are constrained to base this study on the resources available in the Central Library of IIT Kharagpur. The Library is currently negotiating with various publishers and e-book providers to gain access to electronic books and the standard procedure involves asking for trial access for a month and during this period the users as well as library professionals test the utility of the resource to satisfy the teaching, research and other academic requirements of the Institute. The study was undertaken at such a time when the trial access of that portal was made available and hence we included that resource. Other four resources identified are accessible for free, but they are unique resources on their own worth

competing with e-book portal from any major international publisher. We have arrived at this list of five resources after an extensive survey of the resources available. The e-book portals included in this study are:

- **Elsevier ScienceDirect** is a web portal to offer secure and authenticated access to e-journals, e-books and other electronic resources from Elsevier, a world-leading publisher and information provider. A landmark project undertaken by Elsevier together with eight universities from 1991 to 1995, investigated ways to create a digital library that could make the fulfillment of those needs a reality. At this moment in time, ScienceDirect offers over seven million full-text articles from over 2000 peer-reviewed journals, as well as a growing range of authoritative books, including reference works, handbooks and book series. 49 reference works, 150 book series titles and 164 Handbooks volumes are now available online.

- **Project Gutenberg** is the first and largest single collection of free electronic books (predominantly books out of copyright are included), or eBooks. Michael Hart, founder of Project Gutenberg, invented eBooks in 1971 and continues to inspire the creation of eBooks and related technologies today. Presently there are 17,000 e-books online.

- **Digital Library of India** (DLI) is a national attempt to foster creativity and free access to all human knowledge. The portal hosted by Indian Institute of Science, Carnegie Mellon University, ERNET, Ministry of Communications and IT, and 21 participating centres of the Govt. of India. Presently, there are around 50,000 of books accessible on web.

- **University of Virginia Library (E-Text Center)** University of Virginia Library hosting the e-books since 1992. Over 2,100 e-books are available presently and each text on this list can be accessed in HTML for online viewing.

- **Bartleby.com** is the Internet publisher publishing literature, reference and verse with unlimited access accessible on web free of charge. In 1993 it began its personal experiment with 1 classic book. After its incorporation in 1999 it released several reference books.

3. Evaluative Study of e-book portals

There has been no of standard set of parameters for evaluation of web-based information and different studies consider different parameters. Out of the criteria proposed by various authors [1-5, 7, 8, 11] we have taken 20 criteria listed below that can be applied to any web-based information. Out of these, for four parameters, all the portals responded alike and these are listed in Table 1. There are certain other parameters for which the different portals responded differently and these are listed in Table 2.

Table 1: Easy of Use, Response Time, Networkability and Computing Platform

Sl. No.	Criteria	Evaluation
1.	Easy of Use	All uses a very simple crawling procedure to browse the collections.
2.	Response Time	Sites respond well to the users.
3.	Networkability	These are not locally loaded for home use, but can be accessed from the source website on any type of network.
4.	Required Computing Environment/Platform	System requirements; P-4 processor, 40 GB hard disk, 256 MB RAM, VGA monitor, Acrobat Reader with internet connection.

Table 2: Accessibility, Archiving, Authorship, Coverage, Currency and Stability

Elsevier ScienceDirect E-Books	Project Gutenberg	Digital Library of India	University of Virginia Library (E-Text Center)	Bartleby. Com
Access restricted to authorized users.	Meant for free access	Free of cost to all.	Free web-based access.	Excused from any IP authentication.
Data available in the book package include 4 years of back files.	Archiving started from 1971-current.	Books dated back from 1850 are included.	Books archived in the collection are from 17th century.	Some books included are of 18th century.
Provides peer-reviewed information and references to all it sources.	Free up-loadable facility for all. Any one can create and distribute e-books whose copyright expired or printed before 1923.	OCLC selects the materials to be scanned, with the help of India's 21 leading institutions. Meta data and references are included.	Subject Librarian of University of Virginia Library selects the books for digitization.	Bartleby. com, Inc. publishes since 1994. The portal provides Meta information.
Covers 24 subjects in the field of science, technology & medicine.	Coverage is not specific to any subject, category, form and language. Individual volunteers can choose any books to submit.	Collections from Rashtrapati Bhawan, Sankrit literatures from Tirumala Tirupati Devasthanams, books from CMU and INSA, Tibetan, Gurmukhi etc., of 8 Indian and foreign languages.	Collection spans few areas; classics from British & America fictions, children's literature, American history, Shakespeare, African-American documents and the Bible etc.	Publication spread from literature, nonfiction to reference types. Thesaurus, gazetteers, dictionaries, fact books, encyclopedia, poems, quotations etc.
Daily updated	Daily updated	Takes time to up-date	Not available	Daily updated
Provider is well anchored, in both terms, as a provider of reliable information to user community and a world's- leading publisher.	Balance is not maintained, except few guidelines to submit the books, no standard set of rules is granted to publish books.	DLI stands stable with selection of materials for scanning and uploading. This justifies its standard by maintaining 98% accuracy. OCLC as a host looks after its consistency.	Host is responsible for book formats and collection standards. Use of XML, SGML, and TIFF allow the site to create data in a standard manner.	Portal is a provider of co-branded reference service to Yahoo and others. Portal maintains that it has formed partnership with many top American publishers.

3.1 Extensive Study

An extensive study of few selected parameters worth exploration is attempted below. Table 3 presents 'browsability and organization', table 4 highlights 'documentation', table 5 discusses 'help features', table 6 describes 'indexing' and table 7 provides 'display of results'. Different features of 'link to other resources' in the five selected portals are listed in table 8. Table 9 depicts the features of 'searching' and certain 'Value Added' options in the portals are illustrated in table 10.

Table : 10 : Browsability & Organization

Elsevier ScienceDirect E-Books : The browsing facility is provided for a wide spectrum of approaches; Book Series, Abstract Databases, Journals, Home, Search, My Profile & Alerts. Besides these one can avail the browse links for reference, handbooks, browse A-Z and subject areas along with a list of hot topics with text links. The organization of information is logically divided according to the needs of the user and for easy browsing. In addition to these users can browse by 'All Books, 'Book Series', 'Handbooks', and 'Reference Books'. When user will click one of the above options, s/he gets an alphabetical list of all titles with hyperlinks which is a very simple way to browse the database.

Project Gutenberg : Follows a very simple logic for browsing the resource. Users get text links of all the options listed on the front-page of the portal after clicking the online catalogue option. Portal provides alphabetical listing of all search options like 'title', 'author', 'category', 'language', 'Top 100 books', and 'recent'. The recent one takes the user to view the books uploaded on the database recently. Reader also get three fields 'author', 'author word' and 'EText No' for getting books by entering words or no., on the given fields. The chosen colours and text font are simple and visually very balanced. Readers can use these only by clicking appropriate links.

Digital Library of India: Browsing procedure is almost the same as Project Gutenberg. User can browse through the collections with options like; 'title', 'author', 'subject', 'year of publishing', 'languages' & 'document forms'. Users can also choose collection types from the portal, which are presented as Book Collections, Journals, Newspapers and Manuscripts apart from the site offering links to some important books on the front page with the picture of the title page. Click and get is the simple logic of search followed by the site. DLI follows simple way of presenting its collection to users. Use of text and colours are visually harmonious.

University of Virginia Library (E-Text Center) : From the portal's front-page user can get an option 'e-books', which takes users to the free e-book library page. The middle of the screen has various options to search (browse by subject, author and language). Except these two, search portal also offer two more levels of search such as 'basic' and 'compound search'. In 'basic' search, one field for entering words and another drop-down menu, from which users need to select his/her choice of search fields. In 'compound search' two fields for words, one for selecting the proximity operator and one for selecting with in how many characters the search engine will search. One extra field is for result viewing. Good looking design and positioning of text links made the site more user friendly.

Bartleby.com : Site follows a good sense of arrangement by providing all search options at one place. In addition to browse options, users can avail a wide variety of index options ('title', 'subject' and 'author' indexes). Besides these, portal offers four different drop-down menus for collection types with a common search engine. Search options for different collections are with the drop-down menus and listed out the books, which enable users to directly jump to any section. Above all, users can find text link to some of important reference works on the front page. Opening page of the site looks very appealing. Placement of search links, search engines, graphic links, composition of color, and fonts looks satisfactory.

Table : 4 Documentation

Elsevier ScienceDirectE-Books Allows users to take print and/or download the contents from the database. Users can also avail the options as 'Search Tips' and 'Helps', which placed at the utmost right of the search engine. Tips with example of queries are really helpful for users to build powerful search queries.

Project Gutenberg Portal offers facility to download the books and users can also take print. Only few search tips with some examples, which help the user to use the advanced search are provided. No interactive help/training provided for searching the database. But a list of 'Frequently Asked Questions' appended somehow helps the user about using the site and finding the e-books.

Digital Library of India The portal has the provision to view and can take a hard copy of any number of pages and/or whole book, as the collections are free from any copyright protection. For online viewing of DLI collections, users can make their choices out of 5 formats. Portal doesn't have any help topics/tips for searching, FAQ link is there but that are related to the book project not for searching tips.

University of Virginia Library (E-Text Center) Option titled 'Help with searching E-books' as a pre-guide to users about the search. Besides a search engine, site has the list of author alphabets and subject terms, which are simple and easy to search. The search tips are given with suitable examples to search. Readers can read books online and take a hardcopy of only those books for which access are not restricted by the portal.

Bartleby.com Even though the users get the benefit of all possible searches, but for new readers there are no guides/search tips/help messages. From very first page, site has all the search links with drop-down list to with links to the different e-books available. Portal provides all the information online. Users can take a print of books.

Table : 5 Help Features

Elsevier ScienceDirectE-Books Offers manual in several languages, but doesn't have any search capability. 'Help' and 'Search Tips' options are built-in to the search form. The system provides error message during search for mistake made by users and are provided in red color.

Project Gutenberg The portal provides only few search tips in advanced search option. In FAQs, one sub option is for Readers FAQs with questions related to using the site and finding and downloading e-books.

Digital Library of India DLI has the only limitation is there are no help facilities for users, may be because the concern is more in digitizing contents and hosting on web at this stage.

University of Virginia Library (E-Text Center) With the option 'Help with Searching e-books', users can found how to search through a word, phrase, two words and constraint search with some suitable examples. Some portals provide error message, which help users to rectify the error. This system has some messages after search which can't be treated as error message. Users can ask questions about their difficulties to the librarian. Through an option called question, users can avail an online form for asking queries.

Bartleby.com The major weakness found is absence of any suitable help for users. New users may face certain difficulties while searching the database and putting search queries to search engines. The portal is equipped with a search engine of Amazon.com, which offers suggestions to users.

Table : 6 Indexing

Elsevier ScienceDirect E-Books Portal provides some indexes (e.g., authors, subjects, titles, keywords, abstracts, ISBN, publishers and years) and they can be used separately in the 'Browse' option. These indexes appear in the form of menus to browse, so that users can make choice for more than one at a time.

Project Gutenberg The indexes available with the portal include 'author', 'subject', 'category' and 'language'. Besides these, the portal also indexed the most recent posted books, which helps user to browse through the recent books in the database. The indexes are offered in the form of text links on the front-page.

Digital Library of India Site indexes authors, titles, subjects, languages and year of publication. These indexes are accessible on the front page of the portal as simple text links. Besides these indexes, portal also indexes the collection from various organizations like ('Rashtrapati Bhawan', 'Sanskrit', 'Books from CMU', and 'Books from INSA' etc.)

University of Virginia Library (E-Text Center) The portal indexed only subjects, authors and languages.

Bartleby.com Links to title, author and subject indexes are placed on the front page of the portal.

Table : 7 Display of Results

Elsevier ScienceDirectE-Books The formats of result list are different in ScienceDirect compared to other portals. ScienceDirect is explicitly mentioning the lower limit (200 records) and upper limit (1000 records). For navigating with in the result, the users can use the options like 'Next Page', 'Previous Page'. Some personalization features like options for sorting of results of ones own choice, uses can display only the selected result, and user can save the search results. Other options include browse the full text on HTML/PDF format, view the summary, and view the full abstract. Above all, one unique feature is the search engine for search with in the results.

Project Gutenberg Presentation of search results depends upon the size of hits retrieved, since all the results are displayed in one page. Users view all by using side cursor. All the search hits are sorting by default A-Z and no other options are available. Portal indicates, the format of the book, language, Etext-no., and the type of document (e.g., 'audio book', 'music', 'data', 'pictures' etc.) while displaying the results. Users can also estimate the processing time of the search engine.

Digital Library of India Portal opens another page for display of search results and it varies according to the situation and number of hits. When clicking the indexes, users get 20 hits per page and when using the basic search users get 40 results displayed per page. Result display feature offers total no. of hits with links to other results (e.g. 1 2 3 & Next page). When user clicks on the respective links, s/he will get the meta information of the clicked book with a view of the title page.

University of Virginia Library (E-Text Center) Like ScienceDirect this portal also mentions display limits. Spread out of search hits is default of 1-100/page and upper limit of up-to 8000 hits. Personalization option available, in case hits exceed 100. It displays search hits with a link to the title of the book. Offers a link to next hits as 'Next 100 works'

Bartleby.com Readers can view only 10 hits per page out of all results, which is spread out by the site. Also offers 'previous page' and 'next page' options for users to move in the search results. At the top of the result page, users get the total nos. of hits and which set of 10 hits is displayed.

Table : 8 Link to other resources

Elsevier ScienceDirect E-Books Site offers links at its front page for browsing. It also offers hyperlinks to the table of content and links to the pages of book to browse other resources. User also use the links provided in references to navigate other sources.

Project Gutenberg The text links are displayed on the first page of the portal. It provides text-links to all the listed items. The portal does not provide any hyperlinks on the table of content and not even in the pages of the book.

Digital Library of India This portal offers its entire links on the home page. It also offers text links to the indexed items collected from various organizations and also users find the links to statistical and status report. It gives another browser window while search request is being processed.

University of Virginia Library (E-Text Center) This portal also follows the same procedure, as it positions links on the centre part of 'Free E-book Library' page. Text links to the different books and table of contents take users to navigate in between different books.

Bartleby.com The database is linked with 3, 70,000 pages from out side. Links are available on the table of content of the books by hyper-linking all the chapters.

Table : 9 Searching

Elsevier ScienceDirectE-Books ScienceDirect offers two levels of search, 'Basic' and 'Advanced' for users with its search engine. It provides two fields with lots of other options, but it surprised us that both fields have combination of Abstract, Title and Keyword as default access points. User can put his/her choice among other access points like author, subject, ISBN, publisher and year. It offers other choices like 'date from – to', 'all year', 'particular subject' and 'sources' in both the levels of search. Users can limit their search by putting choice on 'Limit by document type' and 'volume'. In advanced level, it offers command line, where there is no field for search.

Project Gutenberg The enlisted options are organized in an easy to browse manner. Users get access points like; subject, author, language, and category along with another option to search recent books. Portal has provided both simple and advanced search. Although the advanced search does not offer command line, 9 fields are available for users to enter their query. Out of these, only Language, Category, LoCC and File type fields have drop-down menus to choose the required options from the list.

Digital Library of India The homepage is linked to 5 major search options (Title, Author, Subject, Language and Year). In addition to these search options, users can access books collected from different organizations. DLI offers search engines with 6 fields as default access points, but for more expanded search, system provides an option called 'More Books', which opens another window and a search engine with 10 search fields. These fields with drop-down menus to put a choice are Author, Subject, Year, Language, Scanning Centre, Scanning Location, Vendor, Source Library and Book status. Book status have 3 options; online, offline and any.

University of Virginia Library (E-Text Center) Searching is site centred and divided the user approaches into 11 subjects, including the authors and languages. Besides these, few more preferences in the form of simple and compound search. Users can avail few drop-down menus and two buttons named submit query and clear while searching. Drop-down menus like 'with in' and 'with in character' are available where user puts his/her choices.

Table : 10 Value Added

Elsevier ScienceDirectE-Books Shortcuts are available within the site in the form of graphics, drop-down menus etc. Menus are available on the top of each page (e.g. 'Home', 'Search', 'My Profile', 'Go' etc.). Other supplements offered by the system are; search engine, option for SDI service through e-mail, saving search history, previous and next arrow keys to move around pages, radio boxes for selecting a particular search hit for display. One can jump directly to the result list from a particular page of the text by using the option 'result list'. One unique feature of ScienceDirect is its E-mail SDI service, which helps user to get the alert on his/her topic of interest.

Project Gutenberg Only plane text links are offered by the gateway. One can find drop-down menus, buttons like 'Go', 'Search' and 'Reset' in basic and advance search. Readers can also get some book and/or features like graphics while searching audio and data books. While reading books online, reader gets options like next page, previous page, first page, apart from this user can directly jump to any page just by typing the page no., on the 'Go to' page option.

Digital Library of India DLI doesn't offer any graphics to text, it has only text hyperlinks and drop-down menus in advanced search option, and an internal search engine with 10 fields is available for the users.

University of Virginia Library (E-Text Center) Direct jump to pages from any where by using text links. Some of the menus users can find at the opening page of the portal. 'Submit query' and 'clear' buttons in basic and compound search levels are available.

Bartleby.com Enhanced features like works are added by multimedia elements and audio pronunciation of dictionary words. Other options allowed users to send the URLs of result page to an email address. Portal is equipped with a common search engine as well as four other drop-down menus. Additionally it offers Amazon and Google search engines.

3.2. Search Fields and Search Facilities

Search fields indicate the variety of bibliographic elements, classification and indexing techniques adopted by these portals. Search fields provided by the e-book resources studied are summarized in table 11. Search facilities indicate the functionality of the search engine incorporated and the options provided to make the search more user-friendly. Search facilities available in the selected e-book portals are tabulated in table 12.

Table 11: Search Fields

Search Fields	Elsevier Science Direct(E-Books)	Project Gutenberg	Digital Library of India	University of Virginia Library (E-text center)	Bartleby.com
Title	YES	YES	YES	NO	YES
Author	YES	YES	YES	YES	YES
Subject term	YES	YES	YES	YES	YES
Keyword	YES	YES	YES	YES	YES
Language	NO	YES	YES	NO	NO
Year	YES	YES	YES	NO	NO
Document Type	YES	YES	YES	NO	YES
Citation & Abstract	YES	NO	NO	NO	NO
ISBN	YES	NO	NO	NO	NO

Table 12: Search Facilities

Search facilities	Elsevier ScienceDirect (E-Books)	Project Gutenberg	Digital Library of India	University of Virginia Library (E-text Center)	Bartleby.com
Boolean Operators	YES	NO	NO	NO	YES
Wild card	?, ! is default	NO	NO	*, !	*, !
Proximity Operators	NO	NO	NO	Near, Not near, Followed by and Not followed by	NO
Advance Search	YES	YES	NO	YES	NO
Simple Search	YES	YES	YES	YES	NO
Result sort by	Date, Relevance	Default is alphabetical	Default is alphabetical	Default is alphabetical	Default is alphabetical
Format for read	HTML, PDF	HTML, Plain text	HTML, PTIFF	e-book, palm, web-version	Only HTML
Result saving and print option	Only Save	Only My Bookmarks	NO	NO	NO
Search term entry	Type directly	Type and/or select from the menu	Type and select from the menu	Type and some of from menu	Type and select from menu

4. Discussions

The aim of the study was to determine the overall structure and to examine whether the systems were designed according to the accepted standards and guidelines, as well as to discover the user interfaces of the systems. In general all the portals are of mixed quality, which was expected, since most of them belong to not for profit ventures. We find some similarities as well as differences among the portals as mentioned in the different tables.

We found that the portals are not invoking strict guidelines for selecting and digitizing the books. Digital Library of India, Bartleby.com and University of Virginia follow certain guidelines according to their own policy statements. In ScienceDirect, the collections are peer-reviewed by a panel of experts. All the portals have their own design and structure for user interface and search functions. But ScienceDirect offers good user interface and functions. From the above study it is clear that all the portals follow common browsing options; 'title', 'subject', 'author', etc. ScienceDirect provides further options like; keywords, abstracts, affiliations, references etc. As far as coverage is concerned, all portals are consistent towards their goal, vision and intended uses. A major difference was found that commercial portals are concentrating towards science, technology and medicine, where as portals available freely covers literature, fiction, classic, linguistics etc.

It is important that user should know all the times where in the systems they are, and have control over the search. We found major differences among the portals in this regard. Except ScienceDirect, none of the other portals provided sufficient navigation buttons, drop-down menus and shortcuts. An interesting feature is that none of these systems has option to exit from the window which should be available all the times. Options for personalizing the content was found in Science Direct only, which allow users to change according to his/her choice. It is surprising to see that portals either have very few tips or no help for the users. We can suggest that systems should have helps like; search screen help, online manual, error messages and error correction suggestions.

One major drawback noticed concerned to user interfaces not matching with the behavior of present day users. It is clear from the above tables that except some of text links to the options on the front page of the portals, no such standard way of search is available. Although all systems have internal search engines, all are very poor in query formulation. Apart from ScienceDirect, none of the other portals have form and command searching with limiters. All systems other than Bartleby.com and Science Direct are not supporting Boolean operators. Many portals do not support proximity operators. Only University of Virginia Library (E-text Center) uses some proximity operators.

5. Conclusions

Various evaluation methods have been proposed, but this study utilizes some of the useful checklists/ criteria for evaluating information found on web. The results of this study can be useful for information scientists studying and/or working with portal-based retrieval of e-books, and also for the designers and developers of future online interactive IR systems. The evaluation framework should be taken as starting point for further development and refinement by including functionalities not covered. By eliminating the disadvantages identified, these systems could be made more easy to use. Also features need to be critically studied with user interfaces of each portal to find which resources have more user-friendly features and best suited to satisfy the information needs of target users.

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