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8-26-2021

## Designing Course Reserves using Koha and VuFind for Library Users

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Mandal, Sukumar, "Designing Course Reserves using Koha and VuFind for Library Users" (2021). *Library Philosophy and Practice (e-journal)*. 6237.

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# **Designing Course Reserves using Koha and VuFind for Library Users**

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## **Abstract**

### **Purpose**

Course reserve module in ILS OPAC and web-scale library discovery services are interconnected to data management and educational resource management systems. Every department and course instructor are designed the course based on the user's requirements. The goal of this article is to analyze the instructional reserves component integrating open source tools Koha and VuFind in order to provide advanced level CMS and LCMS services that satisfy users. . It is also feasible with metadata searching from other repositories, e.g., OCLC WorldCat and Amazon, to increase the web-scale discovery services among the users and library professionals.

### **Methodology**

Popular level software has been selected based on course reserve requirements such as Koha and VuFind. It needs proper installation and configuration with the help of multiple files and scripts. Design the template and layout based on Koha and VuFind for course-specific reserve and add the barcode to display the items and link in Koha library OPAC easily. This course module will be integrated with the VuFind to provide web-enabled discovery services based on departments, instructors, and course URLs.

### **Findings**

The whole integrated domain-specific interface is beneficial to the users because they could easily access the course reserve materials developed by different subject experts. As a consequence, both Koha and VuFind just provide capability of delivering the appropriate course module to the correct participants at the perfect time. Library users have access and download their course from this integrated interface to continue their online learning process. This framework will fully enable web-based services for CMS and LCMS regarding the fulfillment of tags clouds, metadata searching, and OCLC WorldCat Local searching.

### **Originality**

This innovative integrated framework is providing full-text resources using MARC21 tags for the users. The librarians at any academic institution will benefit much from these instructions, stages, and methods. VuFind, which uses a single-window search technique, can also get a course reservation for library users. It is one of the advanced-level web-scale library discovery services for students and instructors to continue their educational activities during the COVID-19 pandemic using the course reserve module of Koha and VuFind.

**Keywords :** Koha, VuFind, Course Reserve, Library Discovery System, and Full-text searching

## Introduction

In libraries, a reserve department is usually a program—much of the usual library professionals putting books on course reserve upon the instructor's permission. The shortened circulation length for books on account allows the number of library patrons taking the course to be increased, for instance, students taking the test. Only at the end of the period, reserve processes generally return to the original circulating. Library from across the nation is making available digitized lecture notes and supporting each accessibility among these works through a process known as "E-reserves." This system offers controlled access to online content for specific courses and only for participants within this group. For just a diversity of activities to be presented, such services are generally related to interaction and course design in the course. Under the reasonable utilization guidelines, institutions could place excerpts from restricted copyright material or digital deposits for authorized course dissemination, including reserved readouts. Something like an electronic version that allows learners to read course content continuously enables a more spartan alternative of discovering and retrieving textbooks ([https://en.wikipedia.org/wiki/Course\\_reserve](https://en.wikipedia.org/wiki/Course_reserve)). To order a printed copy of a book, kindly let us know in the additional directions field on the address label. The safest option for just some information is to directly link to data that seems to be freely available online. Distributors of publicly content providers encompass Copyleft License users and many others. The pedagogical requirements of the program would influence the academic objectives of its use. The prerequisite for educational resources implies that only students enrolled in the program must have accessibility to the reservation contents throughout the program length (<https://libraries.mit.edu/>).

The library is considered to be the beating heart of the educational system. Modern libraries are heavily reliant on computers. Integrated library management systems, including automated and digital library systems, are essential components of an integrated library management system. Metadata formats and standards are crucial concepts and ideas that should be reserved for Koha and VuFind because they help data interoperability and crosswalk between systems. It improves the services provided to students in a learning environment by academic institutions. The librarian's goal is to meet the needs of students and teachers by providing new and innovative services that are made possible by the use of open-source tools and techniques. World vast web catalogs, Online public access in encrypted form, and integrated access are three components of a globally integrated library system enabling increasing information retrieval. Apart from these, there are also housekeeping operations, which include acquisitions, cataloging, circulation, authority control, member generation, and report generation, amongst other things. The following are the fundamental functions and operations of computer-based library management systems. Course Reserve, a Continues to focus open-source integrated library management system module, is an example of an enforced innovative idea. It is imperative and beneficial for the automation of modern libraries. An integrated library management system (ILMS) is what is officially known as advanced level services. Aside from this web-enabled library of domain-specific discovery platforms, the VuFind open-source tool is also a critical component in managing and retrieving course reserve materials in higher education. The COVID-19 pandemic is currently affecting the majority of users who are experiencing severe symptoms. Using the course reserve feature in Koha, this problem can be resolved by allowing users to easily access educational resources such as the syllabus, subject content, and video lectures from teachers to continue the teaching-learning process.

## Review of Literature

These models can help us move from manuscript metadata to knowledge metadata (Alemu... et al., 2012). One must compare recent metadata work to the potential of Linked Data modeling and future technologies to plan future staffing and workflow. Transferring MARC demo global records from Dublin Core metadata in DSpace into OCLC has gotten better Electronic Theses and Dissertations workflow (Deng & Reese, 2009). They are implementing the recommendations in this article as a first step towards coordinated library metadata management. MARC communications data recycle management model based on filtering and transformation exercises at Cornell University (Kurth, Ruddy & Rupp, 2004). The foundation of this study is built on metadata standards and formats that enable their use, management, and a look into the potential for conversion, specifically about the Biblio Link BIBLINK Core metadata elements and their associated comments on the possibility of format conversion (Day, Heery & Powell, 1999). This paper aims to detail a new strategy for digital libraries that will help search across various unrelated libraries by using Dublin Core metadata to the index for Dewey Decimal Classification (Khoo... et al., 2015). Incorporating Web 2.0 tools like social tagging and semantic metadata interoperability can help coordinate online catalogs. (Alemu, Stevens & Ross, 2012). The variety, extensibility, granularity, and openness of the infrastructure presently given by XML, the web, and other advancements are described in-depth (Tennant, 2004). This article aims to present a design proposal for a university web portal at Tébéssa University. The concept of integrated workstations that use local and remote resources, software, and documents is envisioned (Ridda Laouar, Hacken & Miles, 2009). The authors studied cataloging standards in libraries and information centers to learn how difficult it is for librarians to apply new standards in linked data environments (Wahid, Warraich & Tahira, 2018). Still requires a vocabulary to match documents with profiles (Keen, 1999). In addition to an integrated library system, library computer system integration has been added to digital library services. The MARC 21 bibliographic framework, including all tags, fields, and sub-fields, is fully supported by Koha. A part of the web-scale library discovery system is called course reserve. The new library facilities provided by Hofmann and Yang in 2012 were constructed using the OPAC library for academic libraries. As part of a new project to find new search techniques, in 2011, Ballard & Blaine reviewed the unique library catalog and the classic catalog to see which one offered the best service to the users. Professor Niu gave a faceted search in 2014, which counted overall entire number of extra objects in the dataset against all relevant bibliographic sources. In 2008, Merčun and Žumer, comparing six library catalogs based on innovative features, conducted a comparative study to develop an efficient integrated library system. Koha integrated library system could be implemented in a higher education sector (Chaputula & Kanyundo, 2019). Based on comparative testing with NewGenLib, Koha is the best software in an integrated library management system (Singh & Sanaman, 2012). Receiving and ordering are possible using the Koha library automation module, which applies the global system preferences (Benahal, 2018). New York University Health Sciences Libraries' migration of bibliographic data to a new system will allow for the creation of new, innovative interfaces using Koha (Walls, 2011). The diverse search options and approaches allow users to make the most of the Koha OPAC (Khatun & Ahmed, 2018). In the Independent University of Bangladesh library, housekeeping and information retrieval are possible thanks to Koha (Ahammad, 2014).

Integrated library systems only serve the automation-related activities based on the above literature. Web-scale discovery services also implement in some institutions except course reserve. However, this research paper has identified suitable gaps in the course reserve module. This can be achieved using Koha OPAC and the VuFind discovery tool. So, library users have benefitted from the course reserve module because it will increase library resources' use in the electronic form. Discovery level services will provide based on the gap of review of literature OPAC and Web-OPAC. This will be very helpful to the users as it fulfills the course reserve management system both offline and online platform.

## Objectives

This paper's goals are as follows:

- (i) To explore and configuration of course reserve module in Koha and VuFind for enhancing the library discovery services and learning management system.
- (ii) To provide the process of export and import in Koha and VuFind for library users.
- (iii) To display the educational resources in Library-OPAC and VuFind for enhancing the content management system towards library and information services.
- (iv) To highlight the cloud computing services based on OCLC WorldCat and social citation sites for easy access of related items and articles.

## Methodology

The mechanism of the course reserve module in Koha and VuFind is an easy task. Configure the system preference modules in Koha under the circulation parameter. It enabled the course reserve module both in administration and OPAC interfaces towards providing digital services among the library users. Now the shortcut process of the course reserve module allows in Koha, i.e., *Koha Administration >> Global System Preferences >> Circulation >> Course Reserve*. Now in the VuFind integration process, of course, the reserve is based on web-scale library discovery services, which configure three system files such as config.ini, solr.xml, and index\_reserves.php. However, the course reserve index builder script in VuFind is very critical and challenging. Still, this research paper has successfully integrated this module for enhancing the advanced level content management system in library web-scale discovery systems and services. Figure 1 shows the course reserve indexing constructor in VuFind, which includes specific vital components such as BIB ID, Course ID, Department, and Instructor, which are obtainable over library discovery capabilities.

```
<?php
/**
 * Command-line tool to index reserves records to the Solr index.
 *
 * PHP version 7
 *
 * Copyright (C) Villanova University 2009.
 *
 * This program is free software; you can redistribute it and/or modify
 * it under the terms of the GNU General Public License version 2,
 * as published by the Free Software Foundation.
 *
 * This program is distributed in the hope that it will be useful,
 * but WITHOUT ANY WARRANTY; without even the implied warranty of
 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
 * GNU General Public License for more details.
 *
 * You should have received a copy of the GNU General Public License
 * along with this program; if not, write to the Free Software
 * Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
 *
 * @category VuFind
 * @package Utilities
 * @author Tuan Nguyen <tuan@vorku.ca>
 * @license http://opensource.org/licenses/gpl-2.0.php GNU General Public License
 * @link https://vufind.org/wiki/wiki
 */

// Manipulate command line to load correct route, then load Zend Framework:
array_unshift($_SERVER['argv'], array_shift($_SERVER['argv']), 'util', 'index_reserves');
$_SERVER['argc'] += 2;
require_once __DIR__ . '/../public/index.php';
```

Figure-1: Course reserve scripts in VuFind

## Adding and Searching Course Reserve

Searching and adding new course reserves are possible with the help of Koha and VuFind. However, this section has been designed and developed the process of course reserve by applying different approaches: (i) Process of course reserve in Koha ; (ii) Display the course reserve in Koha OPAC for users ; (iii) Integration of course reserves with VuFind for providing web-scale library

discovery services; (iv) Display course reserve in VuFind; (v) Bibliographic metadata search mechanism; (vi) Reference management and citation styles; (vii) Export and import in multiple formats; (viii) Access similar documents from other digital repositories; (ix) Display course-related metadata and full-text information; (x) Linking is made based on MARC 21 tags 856 \$u fields and sub-fields. However, the course reserve process of Koha and VuFind is explained as below:

It is the reservation interface of the Koha course, which can access with more buttons. In particular, this interface is user-friendly both for users and librarians when providing library patrons with full-text library resources. This interface is highly user-friendly and ideal for the construction of a fully integrated library management system. Figure-2 illustrates the course reserve interface in an integrated library system for providing content management system and learning resources from Koha OPAC. The creation of reservations is, of course, effortless by simply clicking the *More >> Reservation Course >> New Course Option*. And then, after completion of all required fields under the course option, click on the save option. Configure, add, and create the departmental and term authorized values. In Figure-2, the configuring and editing interface has been displayed for developing the course contents of multiple subjects. The details in the Koha option include various components such as adding reserves, load and stocks, editing courses, and deleting a system. It depends on advanced level parameters for library users such as the name of the study, term, department, course number, section, instructor's note, staff notes, public note, number of students, and status has been displayed from this integrated interface relating to course details. This interface will show after clicking the add-reserve option in the exact figure, and it will place the correct barcode in various Koha item kinds. Finally, to handle course reservations in an incorporated database, select the publish option (Figure-2).

The screenshot displays the Koha Course Reserve interface. On the left, there is a table titled 'Courses' with columns: Name, Dept., Course #, Section, Term, Instructors, Staff note, Public note, # of students, and Enabled. The table shows one entry: 'Challenging Library science Course-1' in the 'Library science' department, 'DL159U' course number, 'Winter' term, 'Sukarni Mardhi' instructor, 'Course for Students' staff note, 'Open Course' public note, 27 students, and is 'Yes' enabled.

On the right, there is a detailed form for adding or editing a course reserve. The form includes fields for:
 

- Course name:** DL159U-M LIB ESC-0001
- Term:** Summer
- Department:** Library science
- Course number:** DL159U
- Section:** DAY
- Instructors:** Sukarni Mardhi
- Staff note:** Course for DL159U
- Public note:** Course for DL159U
- Student count:** 27
- Status:** Active

 Below the table, there is a section for 'Add Reserve: new Barcode' with a 'Barcode' field containing '123456' and buttons for 'Add Reserve' and 'Cancel'.

Figure-2: Course reserve interface in Koha for create and editing

## Course Reserve in Koha OPAC

Course reserves module has been displayed in Koha OPAC towards searching based on select the type of item, the collection code, the location for shelving, and the home library. Then click on the save option afterward. Open the OPAC interface now using the URL: <http://localhost:8002>, and the reservation option will be displayed, of course, and click this option to view the reservation results retrieved from different courses and subjects. Details of the course reserves are displayed on Koha OPAC after clicking on the name option. Koha OPAC's course reserve details are shown in Figure-3. This can increase the use of library resources relating to course reserves which are developed and

designed by the specific course instructor. So, this interface is very much conducive to the library users both campus and online digital environment.



Figure-3 : Course reserve details interface in Koha OPAC

Then it is required to integrate with VuFind by applying the suitable technical methods and process as per the instruction above stated in the methodology section. So, Koha course reserve integration is possible with VuFind by configuring the koha.ini and config.ini files for database connectivity of two indicators such as database name and database password of Koha. Finally, all the course module has been displayed in VuFind for library users. It can increase the web-scale discovery services based on course reserves from different libraries. It is possible to integrate the Koha multiple instances with VuFind based on OAI-PMH and ILS-DI concepts to provide users with advanced-level integrated faceted services. Most library users greatly benefitted from these multiple instances because they could easily access various documents and information.

## Course Reserve in VuFind

The VuFind Library Discovery tool is to achieve this service. Therefore, this tool and technique in the web-scaling library discovery system and services can easily make reserves possible. However, Figure-4 shows a single-window-based course reserve and is easy to use. The discovery service in the course reserve module is beneficial for library users to find resources from various databases easily. It is possible to integrate the system and services of library discovery with Koha OPAC to obtain educational resources from users, faculty, and researchers using this facility. Overall, it's straightforward and user-friendly. The essential features of VuFind course reserves are pointed as below:

- i) Driver-based Reserves
- ii) Solr-based Reserves
- iii) Indexing thorough Apache Tika
- iv) Displaying course and instructor-specific reserves
- v) OPAC style alphabetic heading browsing
- vi) Federated searching and faceted navigation



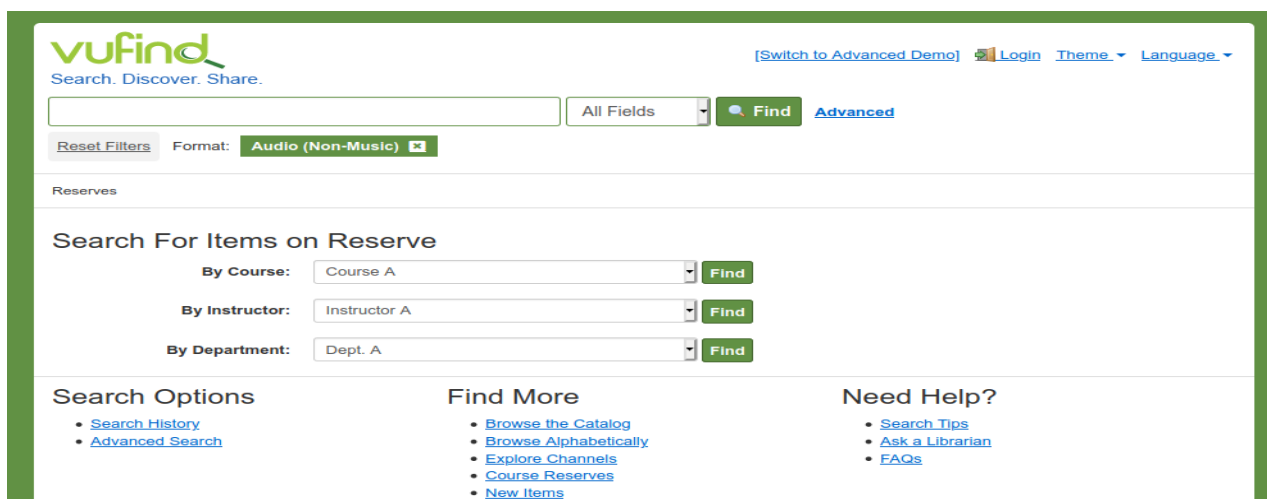


Figure-4 : Course Reserve in VuFind Library Discovery System

It is the metadata in the bibliography on the VuFind course reservation module (Figure-5). The library, format, call number, and items in the discovery services and systems are displayed—the information. VuFind embraces extracting textual metadata formats such as RefWorks, web reference list, desktop citation, MARC archives, MARCXML files, and BibTeX. It is displayed on the course reserve module in VuFind in the bibliographical metadata formats.

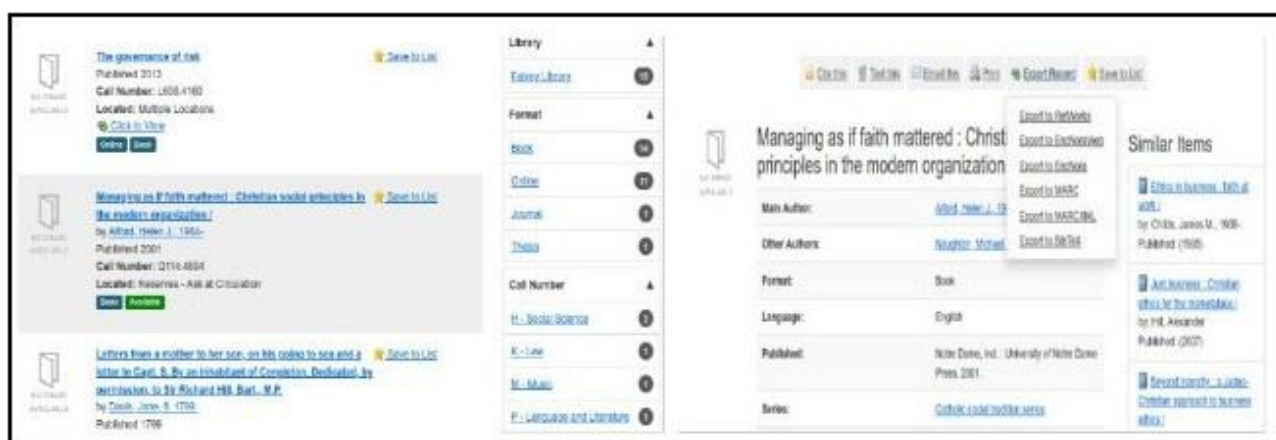


Figure-5 : Course Reserve full bibliographic metadata information in VuFind

References can be created using VuFind discovery services from the RefWorks website. Use the private login option to create Endnote-Export utilizing the web. For easy management of bibliographic metadata, this is very useful and easy to integrate with clarifies to generate endnote methods in VuFind. The same meta-Data format is available as Koha OPAC export to MARC, export to MARCXML, and export to Bibtex. These metadata standards and designs are being displayed in the regular view section of the Koha OPAC metadata.

## Web-based Search Facilities for Users

Other library repositories available online have accessed similar metadata titles. It means that the cloud-based search can be carried out using four online library resource repositories, including (i)



additional libraries (WorldCat) (ii) different databases (Google Scholar) (openlibrary.org). The four library repositories for cloud-based search facilities are shown in Figure-6. For example, after clicking on other libraries such as WorldCat to retrieve or access ebooks, books, and other online resources. The similarity results are presented in the illustration belonging to the same metadata based on keyword titles. It's handy in a cloud computing environment for library users. Figure-6 shows the metadata formats in Koha OPAC's under the Save Record option. Data export and import are possible from this interface because it provides lots of metadata formats. These formats are very feasible for scholars and users. It is possible to create the citation styles from BibTeX and RIS format with the help of Zotero. It also provides advanced-level interoperability formats such as OAI-DC and SRW-DC for harvesting the metadata from other libraries. Linked open data and multilingual facilities are achieved using the RDF and Unicode standards. ISBD display formats have been designed and configured using HTML and XML scripts to enhance and retrieve digital resources among library users.

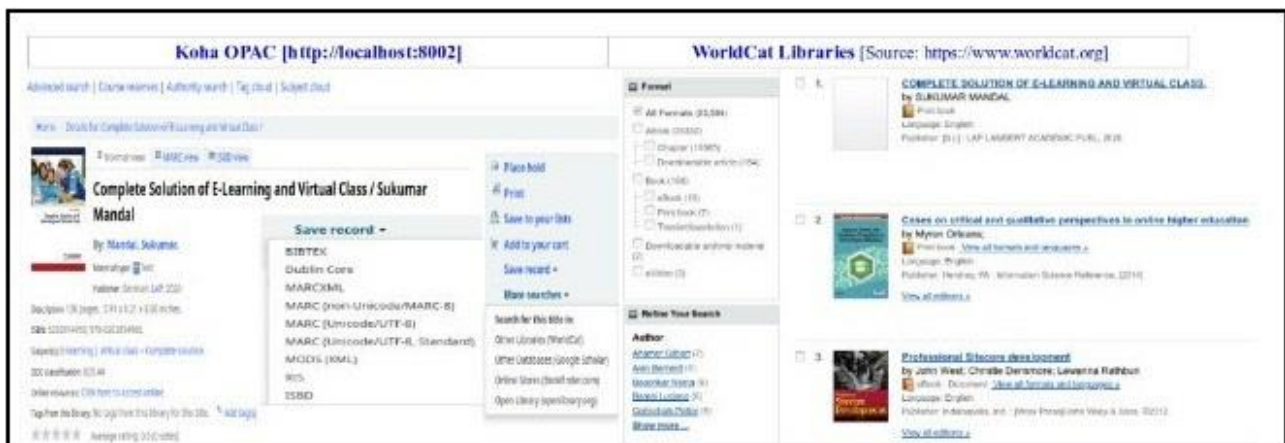


Figure-6: Bibliographic metadata access in Koha OPAC and WorldCat Libraries

## Conclusion

Learning content management system is very important in the modern education system. The course reserve module is a part of the content management system. It is feasible for library users to design and develop course management in any educational organization. However, learning a content management system is possible using Koha and VuFind to provide digital full-text resources. This paper has successfully fulfilled the four objectives based on the above discussions and methods. This integrated framework has been created based on user's requirements. Now the first objective is *"To explore and configuration of course reserve module in Koha and VuFind for enhancing the library discovery services and learning management system."* It is possible to provide the discovery services to increase the learning management system with the proper configuration of Koha and VuFind. The whole approach is practical because it can create the prototype integrated framework, which is very helpful to the librarians for executing the day-to-day activities and providing course materials among the library users. This process is very systematic and logical to fulfill the users' requirements as per the availability of library digital resources. Then accomplish the second objective, *"To provide the process of export and import in Koha and VuFind for library users."* Harvesting and open source technologies, like Koha and VuFind, make it easy to import and export data from various sources. To enable library users with open access resources, several metadata formats specified above in the bibliographic metadata view section are now used to manage crosswalks and interoperability. The third objective has fulfilled *"To display the educational resources in Library-OPAC and VuFind for enhancing the content management system towards*

*library and information services.*" Content and learning management systems provide the best educational resources; open the course reserve tab in Koha OPAC and VuFind to increase library discovery services. This process is beneficial and informative to the users' community because they could easily access multiple information with the help of a single-window enable search mechanism. The fourth objective has fulfilled *"To highlight the cloud computing services based on OCLC WorldCat and social citation sites for easy access of related items and articles."* It is possible to access other bibliographic repositories metadata from OCLC WorldCat and Koha OPAC. Bibliographic details have access just by a single click on book cover images, and it will access information from other repositories smoothly and pinpointedly. Web-scale library discovery systems and services are possible using the VuFind open-source tool for retrieving online educational resources among the users. Overall, these concepts and ideas are handy for executing and providing educational resources among the learners.

## References

- Ahammad, N. (2014). Implementing the Koha integrated library system at the Independent University, Bangladesh: A practical experience. *The Electronic Library*, 32 (5), 642-658. <https://doi.org/10.1108/EL-04-2012-0036> (Accessed on April 18, 2020)
- Alemu, G., Stevens, B. and Ross, P. (2012). Towards a conceptual framework for user-driven semantic metadata interoperability in digital libraries: A social constructivist approach. *New Library World*, 113 (1/2), 38-54. <https://doi.org/10.1108/03074801211199031> (Accessed on September 25, 2020)
- Alemu, G., Stevens, B., Ross, P. and Chandler, J. (2012). Linked Data for libraries: Benefits of a conceptual shift from library-specific record structures to RDF-based data models. *New Library World*, 113 (11/12), 549-570. <https://doi.org/10.1108/03074801211282920> (Accessed on November 10, 2020)
- Ballard, T. and Blaine, A. (2011), "User search-limiting behavior in online catalogs: Comparing classic catalog use to search behavior in next-generation catalogs", *New Library World*, 112 (5/6), 261-273. <https://doi.org/10.1108/03074801111136293> (Accessed on March 25, 2020)
- Benahal, A.R. (2018). Self-reliance of the Koha acquisition module for managing procurement of printed books: An academic library perspective, *The Electronic Library*, 36 (2), 338-349. <https://doi.org/10.1108/EL-12-2016-0263>
- Chaputula, A. and Kanyundo, A. (2019). Use of Koha-integrated library system by higher education institutions in Malawi. *Digital Library Perspectives*, 35 (3/4), 117-141. <https://doi.org/10.1108/DLP-07-2019-0028> (Accessed on October 14, 2020)
- Day, M., Heery, R. and Powell, A. (1999). National bibliographic records in the digital information environment: metadata, links and standards. *Journal of Documentation*, 55 (1), 16-32. <https://doi.org/10.1108/EUM0000000007136> (Accessed on September 11, 2020)
- Deng, S. and Reese, T. (2009). Customized mapping and metadata transfer from DSpace to OCLC to improve ETD work flow. *New Library World*, 110 (5/6), 249-264. <https://doi.org/10.1108/03074800910954271> (Accessed on October 16, 2020)
- Hofmann, M. and Yang, S. (2012). Discovering what's changed: a revisit of the OPACs of 260 academic libraries. *Library Hi Tech*, 30 (2), 253-274. <https://doi.org/10.1108/07378831211239942> (Accessed on March 25, 2020)
- Keen, M. (1999). Using Channels, Topics, Keywords and other Metadata in an Electronic Alerting Service, *VINE*, 29 (4), 3-12. <https://doi.org/10.1108/eb040726> (Accessed on August 27, 2020)

- Khatun, A. and Ahmed, S.M.Z. (2018). Usability testing for an open-source integrated library system: A task-based study of the Koha OPAC interface. *The Electronic Library*, 36 (3), 487-503. <https://doi.org/10.1108/EL-03-2017-0049> (Accessed on August 16, 2020)
- Khoo, M.J., Ahn, J.-w., Binding, C., Jones, H.J., Lin, X., Massam, D. and Tudhope, D. (2015). Augmenting Dublin Core digital library metadata with Dewey Decimal Classification. *Journal of Documentation*, 71 (5), 976-998. <https://doi.org/10.1108/JD-07-2014-0103> (Accessed on November 3, 2020)
- Kurth, M., Ruddy, D. and Rupp, N. (2004). Repurposing MARC metadata: using digital project experience to develop a metadata management design. *Library Hi Tech*, 22 (2), 153-165. <https://doi.org/10.1108/07378830410524585> (Accessed on September 18, 2020)
- Merčun, T. and Žumer, M. (2008). New generation of catalogues for the new generation of users: A comparison of six library catalogues. *Program: electronic library and information systems*, 42 (3), 243-261. <https://doi.org/10.1108/00330330810892668> (Accessed on March 25, 2020)
- Niu, X. (2014), "Faceted Search in Library Catalogs", *New Directions in Information Organization (Library and Information Science, Vol. 7)*, Emerald Group Publishing Limited, pp. 173-208. [https://doi.org/10.1108/S1876-0562\(2013\)0000007013](https://doi.org/10.1108/S1876-0562(2013)0000007013) (Accessed on March 25, 2020)
- O'Dell, A.J. (2015). Planning for Linked Data: Recruitment, Training, and Workflow Design for Resource Description and Metadata Management. *Library Staffing for the Future (Advances in Library Administration and Organization, Vol. 34)*, Emerald Group Publishing Limited, pp. 245-261. <https://doi.org/10.1108/S0732-067120150000034011> (Accessed on November 8, 2020)
- Ridda Laouar, M., Hacken, R. and Miles, M. (2009). The role of web services in portal design: approaches for an Algerian university library. *Library Hi Tech*, 27 (3), 460-479. <https://doi.org/10.1108/07378830910988577> (Accessed on August 10, 2020)
- Singh, M. and Sanaman, G. (2012). Open source integrated library management systems: Comparative analysis of Koha and NewGenLib, *The Electronic Library*, 30 (6), 809-832. <https://doi.org/10.1108/02640471211282127> (Accessed on March 25, 2020)
- Tennant, R. (2004). A bibliographic metadata infrastructure for the twenty-first century. *Library Hi Tech*, 22 (2), 175-181. <https://doi.org/10.1108/07378830410524602> (Accessed on September 21, 2020)
- Wahid, N., Warraich, N.F. and Tahira, M. (2018). Mapping the cataloguing practices in information environment: a review of linked data challenges. *Information and Learning Sciences*, 119 (9/10), 586-596. <https://doi.org/10.1108/ILS-10-2017-0106> (Accessed on August 6, 2020)
- Walls, I. (2011). Migrating from Innovative Interfaces' Millennium to Koha: The NYU Health Sciences Libraries' experiences. *OCLC Systems & Services: International digital library perspectives*, 27 (1), 51-56. <https://doi.org/10.1108/10650751111106564> (Accessed on September 26, 2020)

## Webliography

[https://en.wikipedia.org/wiki/Course\\_reserve](https://en.wikipedia.org/wiki/Course_reserve) (Accessed on August 08, 2021)

<https://libraries.mit.edu/> (Accessed on August 11, 2021)