

# DESIGN AND DEVELOPMENT OF INSTITUTIONAL REPOSITORIES OF HERITAGE GROUP OF COLLEGES USING D-SPACE: A CASE STUDY

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## ABSTRACT

*An Institutional Repository is a tool useful to all academics and also a best tool for resource sharing and support in providing services to users or to the members of its community for the management and dissemination of digital materials created by the institution and its community members. An institutional repository includes different types of documents and materials such as e-prints, technical reports, theses and dissertations, data sets and teaching materials generated by scholars. IR serves as an information product which helps in compiling the institutional intellectual resources at one place and make it available for common use. Universities are places where qualitative knowledge in the form of publications are generated continuously, but the compilation of these resources is not properly recorded even in secondary resources and left as grey. Due to voluminous growth of literature, the need is felt to develop a mechanism to isolate and prepare a collection at university level and later linked for the academic purpose. ICT and open source software solved the problem of storage and retrieval and to develop institutional repositories of publications and create facility for making availability of publications through building IR. The present research study deeply investigated the need and use of IR of The Heritage Group of Colleges. Here, it has also discussed how Institutional Repositories have designed by the Open Source Software D Space and how the developmental process is going on to improve its usability. But some findings and suggestions are have made on the basis of survey.*

**Keyword:** - D space, Digital library, Institutional repository, Metadata, Open source

## 1. INTRODUCTION

Library plays an important role and if it is a technological institution and the library is automated and digital based, then nothing could be better than it. A digital library or digital collection, is an online database of digital objects that can include text, still images, audio, video or other digital media formats. The digital content may be stored locally, or accessed remotely via computer networks. These information retrieval systems are able to exchange information with each other through interoperability and sustainability. Heritage is one of the leading institutions in Kolkata. Institutional Repositories are very much important for the institution. An Institutional Repository means an archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution. An institutional repository can be viewed as a set of service that an institution offers to members of its community for the management and dissemination of digital materials created by the institution and its community members. D space is one of the most important and highly usable Digital library software. It is free and easy to install and also completely customizable to fit the needs of any organization.

## 2. REVIEW OF LITERATURES

A literature review is an overview of the previously published works on a topic. Present study look over the numerous types of resources like reference books, research articles, thesis, relevant journals / periodicals, and the relevant web sites for considering the review from the previous study.

Raym, C. (2002) said Institutional repository represent the logical convergence of faculty driven self-archiving initiatives, library dissatisfaction with the monopolistic effects of the traditional and still-pervasive journal publishing system and the availability of digital networks and publishing technologies. The monopoly power of journal may be reduced and the competition of market place can be increase if we can take some control over the dissemination and management of intellectual outputs of institutional or organization resource persons. He also believes that without third party publishers IRs can take the role of disseminating their intellectual outputs between the resource persons who have need these.

Lynch, C. A. (2003) according to him, IR is one type of intellectual outputs of the resource persons of any institution of any institution and its community members. Main aim is long term preservation, access and dissemination or distribution. IR needs fulltime environment and collaboration among librarians, information technologists, archives and record managers, faculty and university administrators and policy makers. A specific software is needed for doing all the works of IRs.

Genoni, P. (2004) said that during the year 1990's IRs emerges as a subject based repositories and became very much popular by ArXiv.org was a model of IRs', which was at Cornell University. The model was recognized as a base model of IRs, which contain subjects of physics, mathematics, computer science and quantitative biology. Here it has been said that those articles should be present in the archive of institutional repositories, which have either been published in a peer reviewed outlet or to have successfully concluded the peer review process.

Thakuiria, J. (2008) emphasized was given on the process of building IR by using D space. Here no institution was taken as speciality. Here, it discusses implementation of D Space as institutional repositories. D Space has developed a model that allows users to use the system submit and use content, and administrators can organize and configure the system. In order to be more usable to different types of users, the software provides a configurable submission and workflow process that can be fit to any organization's information needs. It has been concluded as one of the leading uses for D Space is as an institutional repository. D Space followed the librarian's inclination to create a system that would be as easy as possible to implement and use, rather than push strictly in the direction of digital library research from which a more flexible system might have emerged.

Birader, B. S. (2012) studied a case study and limited only to Kuvempu University, Karnataka, India and describes the steps on taken in implementing the IR. The present paper highlights the project undertaken i.e. creation of Institutional repository at Kuvempu University, India. The project is aimed to provide access to the literature highlighting institution's scholarship and to enhance the visibility of the institution's scholarship. It also provides a brief summary with guidelines to access the database.

Ray, B. K. (2018) said about the content of IR. He wrote here that, what should be the content of IR that varies organization to organization but the main thing is journal articles, theses and dissertations working papers, research reports, book chapters etc. The most popular and free repositories are DOAR and ROAR.

### 3. METHODOLOGY

#### 3.1. In a nutshell

Firstly a literature search has been carried out to study the literature on Institutional repositories. A user survey has been conducted on the basis of questionnaire method beside this survey of faculties has been conducted on the basis of questionnaire and by informal discussions. Here all the works has been done on all the colleges of the Heritage campus for sample survey during the period 2015 to 2018. Here 125 users are surveyed with one set of questionnaire for the faculties and students. Apart from the above, data has been collected from different, institutional and human resources. After analysis of the outcomes of user survey, substantial literature search and researcher needs final conclusion has been drawn.

#### 3.2. Design and development of present work

##### 3.2.1. Installation history

As soon as the administrative body was agreed, an agent was selected (due to lack of expertise person) for installing and customizing of D Space.

Step by Step process of implementing D Space: This part is mainly done by the agent with the help of system administrators.

- At first some minimum requirements are needed for the server to install and run the software. These are, minimum RAM, Hard Disk Space and Central Unit Processor.
- At the time of installation UBUNTU was installed firstly.
- Then Apache TOMCAT was installed.

- Then D space E 5 was installed and total configuration was done by the agent on the basis of the requirements for the library.

3.2.2. The main Work process on D space

- The main work process of D Space was done by the following way.
- First the Top Level Communities were created.
- Then under each top level community, sub communities are created.
- In each sub community, collections are created.
- Here, it is shown the communities and sub communities with their individual collection.

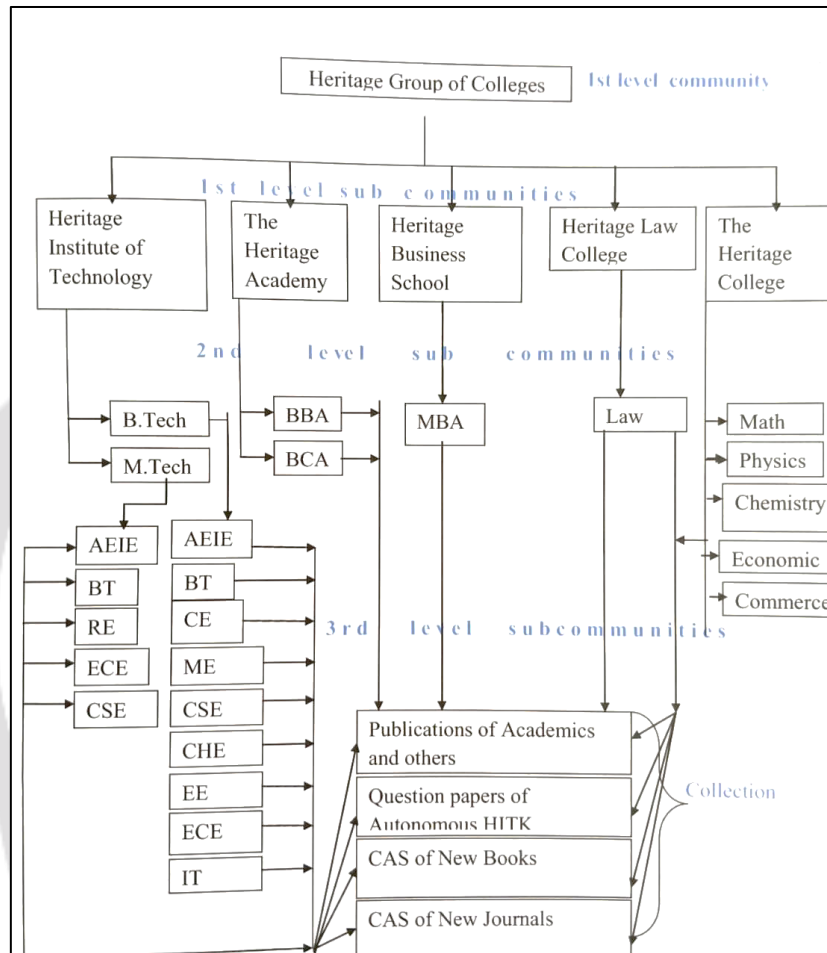


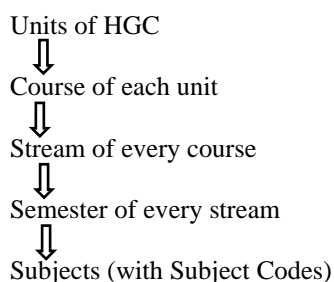
Fig-1

3.2.3. Detail Description of communities and sub communities

- Institutional repository  
This Institutional Repository has two parts-

- Question papers of Autonomous HITK.

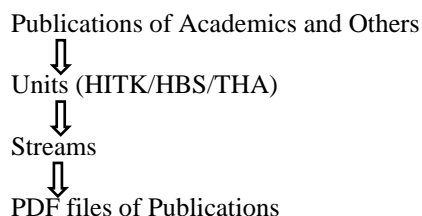
Question papers of all semesters are generally collected from the Examination Control Department, in soft copy. If softcopies are not available, then the copies are prepared in pdf format by the library professionals themselves. The classifications are as below -



All these are arranged according to the year of examinations.

b. Publication of Academics and others.

In this case, all faculty members of different sections generally submit soft copies of their publications to their concern person. After this all soft copies of these publications are gathered and divided on the basis of departments by the library professionals and are to be ready for uploading. All these publications are divided according to the departments and each departments are divided according to their streams.



c. Services

Here the main services which are provided by D space are –

1. List of online journals, Databases with URLs.  
 In this section, all online journals and e-books which the institute generally subscribe, are given with their corresponding URL. All the faculty members and students are the main users of it. The users have to click on the "List of Online Journals, Databases with URLs" and just click on the online database, which they want to access, the home page of the database will open directly.
2. List of online books and URLs.  
 This part is only for accessing online books. The institution subscribes the institutional membership of BCL i.e. British Council Library and also DELNET. By accessing these, students can access lots of e-books on their subjects as well as many fictions. All the faculty members and students are the main users of it. The users have to click on the "List of Online Books with URLs" and just click on the online database, which they want to access. The home page of those databases will open directly.
3. Bibliographic database of CDs and DVDS of HTK.  
 Heritage Group of Institutions generally subscribe many print journals. Among those journals some important are Digit, PC Quest, Open source for You, IT Cd, Developer IQ etc. These journals contain a CD/DVD with it in every issue. The Scanned image of these journals is generally main part of this section. These CDs/DVDs are collected as accompanied material with books and journals. In this case CD/DVD labels are scanned and uploaded through D Space in Digital Library portal. As PC Quest, Open source for You, Developer IQ etc. are monthly journals, so the CDs/DVDs also come on monthly basis and these are arranged monthly basis also. Students and faculty members are the main users of it. The users have to click on the particular collection of this community named "List of CDs and DVDs" and they have to make a choice which issue will be useful for them by seeing the metadata of that particular issue. Then they collect CD/DVD from the self.
4. Direct Access Services.  
 These are NPTEL, OPAC/WEB OPAC, e-pathshala, e- Gyankosh, NDL etc.
5. Current Awareness Services.  
 Through D Space current awareness services of print journals and books are given to the users. In case of print journals the cover pages and content pages of the current issues are scanned machine. In case of books, the list of books are prepared on the basis of month or financial year. Journals are arranged on the basis of departments and books are arranged on the basis of unit i.e. HITK/HBS/THC etc. The main users of this part is faculty members. Sometimes the students also access this part. The main metadata of this part is, Titles of the journals, volume, issue, ISSN no. publishers, titles of articles etc.
6. Open access Repository and Journals.  
 This is the section of open access repositories i.e. open access journals and open access books. Students can get lots of e-books and e-journals according to their subjects from this section. Just click on the Open Access Resources, two links will come.
  - a. Open Access Repository
  - b. Open Access Journals
 The users have to click on any of the two, then automatically the page of respected will be opened.

7. Carrier Digest

In this section various types of employment related news are kept for the students. The newspapers are collected from the site "Bangla Job Guide" and all pdf s are downloaded. These are arranged first language and then weekly basis. Main users are student as well as faculties also.

Accessing Process:

- ✓ The users have to just click on the Carrie digest sub community and then select any collection from it like Employment news, Karmakhetra, Karma Sangsthan etc. and after that they can easily selection the weekly newspapers and can access it.
- ✓ The second method of accessing it is, just write the job heading in the search box and press enter button from the computer In this case, all the newspapers related to that job heading will come at a time.

Metadata is the title of the newspaper along with all the headlines related to jobs. Total submission, approval and uploading process are being executed by the admin (a library professional)

8. Special service process.

A special service process is maintained in this case. All the lists of books, journals and whatever is uploaded in digital repository database through software, a mail generally is sent to them for giving information about the submission. In this case the users of special community/communities and collection/s gets mail service that what has been submitted, which they are subscribed.

In this case a e-person is to be created who cannot not upload any material through D Space. But can get update about the submission.

- a. The processes are described briefly in below.
- b. First a software configuration will be made.
- c. Then the technical person has to connect with the D Space server by putty.
- d. Then he/she has to enter to the server and have to give the command.
- e. Then he/she has to give the name, surname, institutional mail id, where all notifications will go and give a secret password.
- f. Last the e-person is created.
- g. Open the D Space page by giving the ids and password of the e person and have to give the subscription of the collection/s or community/s of their respective subjects.

**4. FINDINGS AND DISCUSSION**

The data collected (as sample) from the faculties, librarians and research scholars belongs from Heritage Group of Institutions, Kolkata, to design and develop of IR which may be beneficial to the all library user of Heritage Group of Colleges. The survey was on the basis of random sampling.

Depending on the attendance register, the frequency of using digital library of HGC is as follows. These calculations are done on the basis of per day users coming of digital libraries of all units.

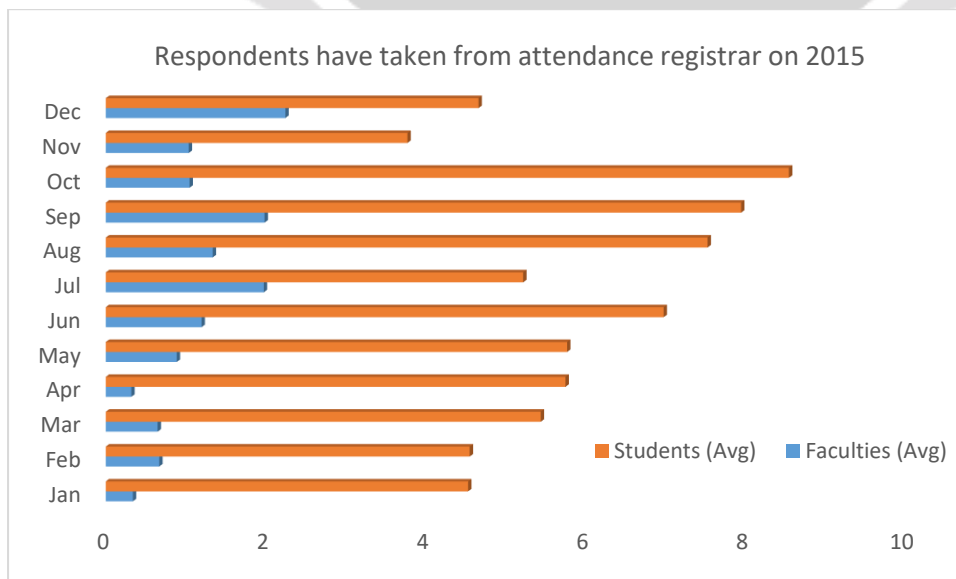


Fig-2

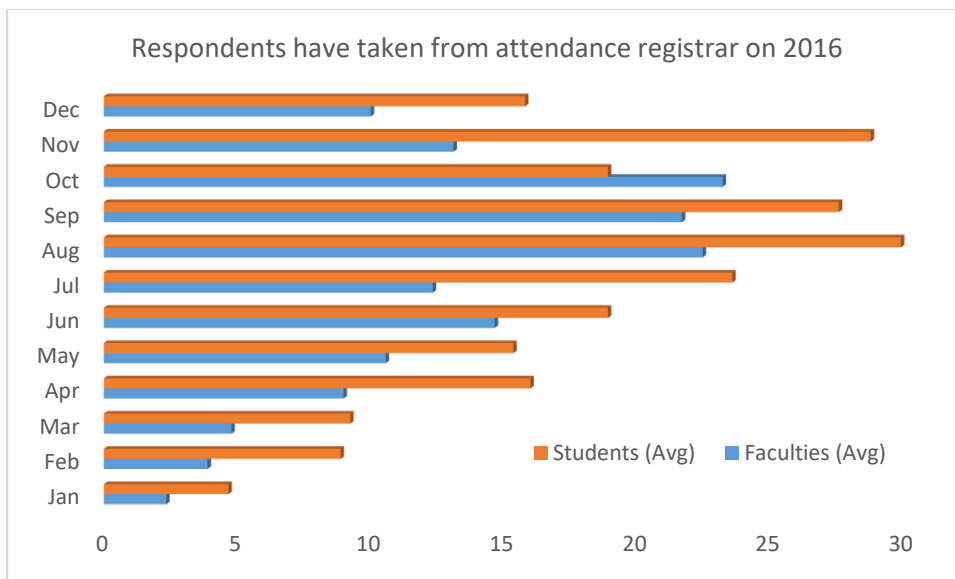


Fig-3

It has been shown that digital library use increased day by day. It is possible to initiate IR with the help ICT and open source software like D space which helps to compiling the intellectual collection of all units of Heritage Group of Colleges.

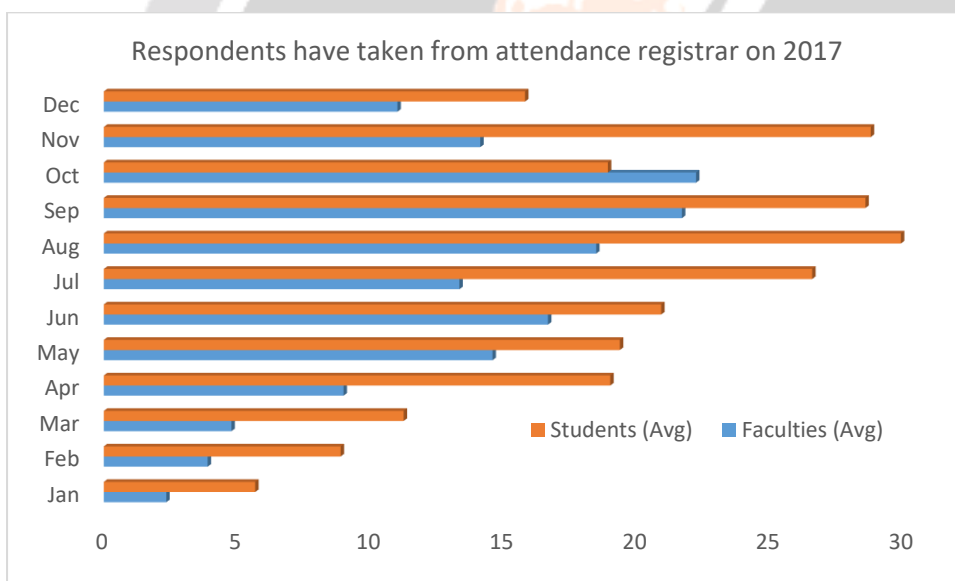


Fig-4

The graph also shows the increase of digital library use. The use of digital repository at Heritage Group of Colleges has been observed to be increased. In 2015 the average of users per day used the digital library was 70.82, in 2016 the average increased to numbers of 217.42, in 2017 it was 233.42 and in 2018 the number was 242.27.

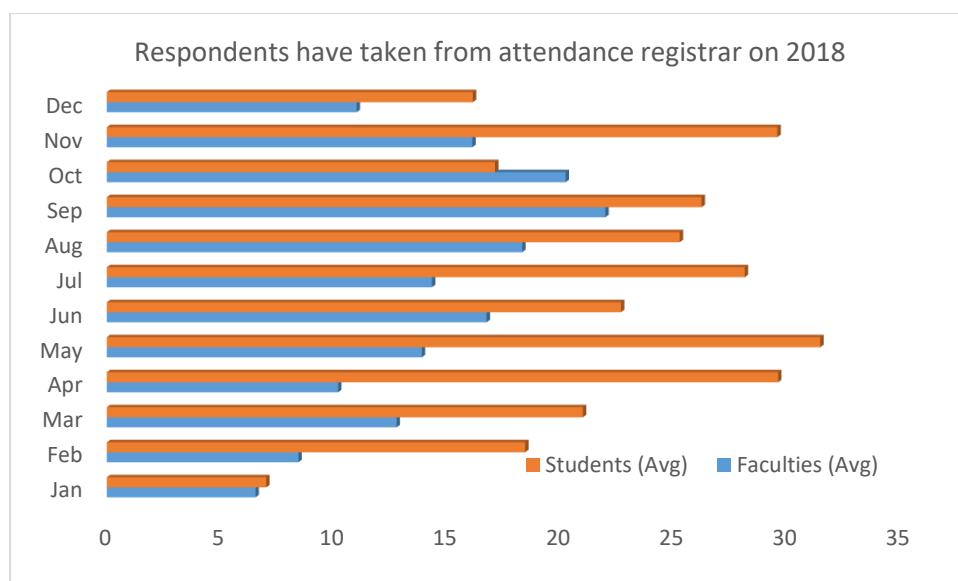


Fig-5

This table-1 shows that, use of D space is running only at HITK, then at THA. But, as it is under developed project, so it will be developed at other units very soon.

Fields for searching information	Number	Percentage (%)
Subject/Keyword	65	52
Title	33	26
Author	16	12.8
Name of the Journal	47	37.6
Publisher	26	20.8
Year	15	12
Others	9	7.2
TOTAL	211	168.4

N= 125 ('N' denotes total number of respondents) Note: People may select more than one answer(s), so percentages may add up to more than 100% The maximum respondents preferred 'subject/keyword' to retrieve information using e-resources. The fields like 'Title and Author' were also highly preferred by information seekers while least value recorded by the field 'Date of publication'. From this it is clear that subject/ keyword, title, author are highly usable fields in searching information in e-resources by the respondents.

## 5. CONCLUSION

In this case a conceptual model of IR was designed and developed at heritage Group of Colleges, which may be followed to other libraries. Here, D Space open source software is selected and installed for the development of IR. In conceptual model of IR paramount documents such as research papers, thesis, proceedings etc. are uploading. It might help to boost citations of individuals and it may further improve academic reputation of faculty and researchers as well as organization. This initiatives help to increase the usability of digital repository and other online databases. All library services (except issue and return) as well as resources can be brought at a single window with D space. Thus the time can be saved by the users as well as it saves the cost of the institutions.

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