Enhancing Teaching Learning Process using Digital Repositories

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ABSTRACT   *This paper highlights the present status of Institutional Digital Repository (IDR) in higher education by its collection type, subject coverage and total number of digital repository collections available to academic community as open sources. This paper focuses to develop and enhancing teaching learning process in higher education institutions.*

Introduction:

Digital repositories are developing rapidly as a key element of academic cyber infrastructure. Even when academic institutions are grappling with difficult budget

decisions in the current economic environment, they need to have a strategy for providing repository services.

Libraries are making diverse contributions to the development of many types of digital repositories; particularly those covering locally created digital content including new digital objects or digitized versions of locally held works. In some instances libraries are entirely managing a repository and its related services, but often they are working closely with other stakeholders at their institutions to jointly develop repository services.

The environmental trends that have contributed to the development of digital repositories are all driven by the ubiquity of digital information including increased capacity of the personal workstation, the broadening of bandwidth and strengthening of network capacities, reduced costs and learning curves associated with digitization and storage, and the explosion of both commercially and privately produced digital content. Economic pressures associated with the rising costs of journal publications, especially in STM (science, technology, and medicine), along with the development of enabling technologies, have led to open access movements with preprint and post print digital repositories offering a different paradigm for the distribution of scholarly output. The open source software movement has led to several initiatives that continue to develop repository software and in turn, several library vendors have begun to develop commercial systems for repository management. Learning or course management systems have matured as campus-wide enterprise systems and have enabled faculty to use digital technologies in creating digital learning objects.

What are digital repositories?

Digital repositories defined A digital repository is an online archive in which authors and academics can deposit their work, with the intention that it will be openly available in digital form. The term 'digital repository' may also be used to refer to the organization which is responsible for the long-term maintenance of digital resources and for making these resources available to the public or specified communities of users.

A digital repository is a secure online database that houses digital versions of most authorized grades 4 to 12 student basic textbooks for language arts, mathematics, social studies and science. Individual publishers cooperated to make this digital repository a reality.

An institutional repository consists of formally organized and managed collections of digital content generated by faculty, staff and students at an institution. The content of these repositories can be made available to colleagues and students at other institutions as well as to the general public.

When we use the terms "repositories" today, we can be speaking about one of many different technologies that support the storage and distribution of digital content including :

- Collection-based digital repositories managed by library professionals, either stand alone or aggregated.
- Institutional file storage systems
- Collections of research data and reports managed by academic departments.
- Students academic portfolio systems.
- Digital asset management workflow systems.
- Web content management systems used by institutions or departments to store and stage web content.

While many of these components can play roles in capturing and managing digital content, an institutional repository is a more specific concept-a centrally managed collection of institutionally generated digital objects designed to be maintained in perpetuity.

Why a digital repository?

This repository is one strategy for addressing the needs of students who have education relating to accessing print materials. The goal of this repository is to improve access to digital learning resources and reduce the need for staff to scan individual textbooks. These publisher- supplied files also require less editing than scanned files.

In the future, publishers will be making the majority of student resources available digitally, either through direct purchase from the Learning Resources Centre or through the publishers' websites, and there will no longer be a need for the digital repository.

There are many benefits to establishing a digital repository, including the opportunity to provide a wider range of educational resources to your faculty, and the positive impact this may have upon your institution's scholarly reputation.

A digital repository:
* enables staff and other subscribers to have easy access to scholarly and research material generated by members of your institution;
* provides access to a range of materials at other institutions worldwide, where your repository forms part of a global system of interoperable repositories;
* provides stable, long-term archiving of information and research output thereby preserving it for the future
* allows for information to be widely and quickly disseminated so that it achieves the highest impact (this can be contrasted with traditional publishing models which are based on restricting, through subscription prices, access to information);
* increases the academic reputation of your institution by demonstrating the

quality and relevance of the research output produced by members of your institution and by increasing your institution's general visibility, which can translate into tangible benefits such as increased funding from both public and private sources; and

* facilitates greater citation of deposited articles, thereby increasing the profile of contributing authors.

Use of IR in Higher Education

Repositories are built for people, therefore it is important to

stipulate what kind of services an Institutional Repository will be helpful for. Students and faculty members increasingly recognize the need to store their intellectual output in the form of personal collections, and to make available the results of their work within and outside the institution. We presently face a great disparity between our ability to create digital assets and our ability to control our inventories of digital assets. Our libraries have done an outstanding job of building controlled asset inventories of print materials, and increasingly of electronic journal content form within and outside the institution. Most of the collections managed by our libraries, however, are created outside the walls of our institutions.

Our institutions have done a less adequate job, however, of providing the tools to create manage and inventory our rich media assets like videos, audios, presentation materials, datasets, records of collaborations, research work in progress as well as more traditional digital assets created by faculty and students.

Institutional Repositories and Higher Education Challenges

An institutional repository consists of formally organized and managed collections of digital content generated by faculty, staff, and students at an institution. Repositories are important for organizations in helping to manage and capture intellectual assets as a part of their information strategy. Repositories can provide linking to other repositories and can also provide machine process able data to support HE institutions to address the challenges. There are a number of institutional repository initiatives underway within higher education.

1 MIT's DSpace is an open source software platform that enables capture and submission of works, distribution of those works, and long-term preservation of assets. DSpace' activity is to create a federated collection of intellectual resources from the world's leading research institutions.

2 EPrints initiative is designed to manage disciplinary or institutional print collections, rather than digital collections. Eprints software is Open Archives Initiative (OAI) compliant and freely available under a GNU license, and is in use at California Institute of Technology, the University of Queensland, and other institutions. This section provides a comprehensive summary of the information in institutional repositories that relates to the higher education challenges. Course information: Course information institutional repository mostly contains courses/programmes information. This repository also includes aims of the programme, intended learning outcomes, syllabus, learning and teaching methods, assessment, time tables, programme fees and length of the programmes. This type of repository requires to response some of the higher education challenges. Specifically, according to course information available in different institutions can be used to more efficient curriculum, programme or module design. Also in the authors believe courses/programmes information needs to be made accessible across institutions to efficiently design/align the curriculum. The module designers can compare programmes or modules in different institutions and find the gap and can offer new programmes or modules. Moreover to attract local/international student institutions need to make courses/programmes information accessible to everyone.

Repository that contains courses/programmes information needs to be made accessible to employers (outside of the institutions) so that they can involve in job placement of students and also in course/module design to enhance the student employability. This repository also needs to be made accessible to the accreditation bodies for more efficient accreditation of the higher education institutions and programmes. Specially the programmes output that deliver the higher level skills need to accessible to funding bodies to attract funding.

Teaching and Learning material: These types of repositories contain teaching and learning material of an institution. According to enabling access to teaching and learning materials across institutions will certainly improve the quality of learning and teaching of the higher education institutions as students and teachers can access lots of learning and teaching materials avail-

able across the institutions and they can develop themselves accordingly. The author is also believe that teaching and learning materials need to be shared across the institutions for better quality of learning and teaching activities in the institutions as teachers and learners can have more deeper understanding on any specific subjects. They can broader their knowledge having lots of information on any subject area. Student admission data: Repositories that contain students' general information for example, Personal data (name, contacts, email, homepage, URL, images), Relations to other people in the institutions, Interests, Accessibility and preferences (language preference, disability, eligibility), demographic characteristics (e.g., ethnicity/race, sex, Age), Geographic origin/Residency, Financial information, Students' living arrangements, students security feature (keys, password, credentials) etc. This repository containing student admission data needs to be made accessible across departments (for students with common modules) in the institutions to efficiently create group for learning and teaching activities. For example if the teacher wants to build group according to students geographic origin then this repository will help them to create the group efficiently and so on.

Also to efficiently support student retention institutions need to make student admission data accessible across departments in the institutions so that institutions can analyse different data to monitor students progress. For example institutions can analyze student interest and so on to identify the early sign of student disengagement with their study. Student admission data and contextual information of students (like academic attainment, aptitude and potential) also needs to consider in widening participation in higher education.

Student academic record: Repositories contain students' academic information including Goal of the learner, Achievements and learner history [performance (students' pre-college characteristics/Academic preparedness (e.g. high school GPA, SAT score)), Certifications, Competency/Skills/Experience/Knowledge, Portfolio, Current programme's information, Transcript (grades), Activity, Involvement in campus programs (e.g., Freshman Orientation Course, Educational Opportunities Pro- gram)], Context, and extra-curricular activities etc. Institutions need to be made accessible this information across departments to efficiently create group for learning and teaching activities. For example if the teacher wants to build a student group according to students GPA (e.g. who have high GPA or any order) then this repository will help them to create the group efficiently and so on. Also this repository needs to support student retention effectively and efficiently.

Students' academic information need for efficiently support in student retention as institutions can monitor students' progress on any subject from their grades and if there is poor grades they can find out the reason and support them accordingly. So these information needs to be made accessible across departments in the institutions to support student retention. Also some selective information from this repository needs to be made accessible outside of the institutions to enhance student employability (skills, knowledge, work experience and personal attributes need to be made accessible to employers).

Resource information: Repository that contains institution's educational setting information need to be made accessible across departments in the institution to support student retention. Educational settings are namely the classrooms, laboratories, studios of the campus, residential halls, facilities, equipments, supplies, libraries, and so on. This information can also support to attract local/international students if institutions make it accessible outside of the institutions. Also making available this information to the accreditation bodies for efficient accreditation as these resources are also considered in the accreditation process. Moreover sharing this information across departments will help to minimize higher education institution cost by sharing these resources across departments

Problems with Sharing Repositories

The success of institutional repositories has been somewhat spotty. Over forty universities are reported to employ reposito-

ries in UK higher education or further education to publish their research output, conference and journal articles, presentations or course material. There is a value to be gained by letting institutions have access to external repositories and by sharing their data with them.

Exposing data for sharing can provide significant value in addressing higher education challenges and in supporting teaching and learning activities. At the same time, there are certain challenges that need to adequately discussed and addressed. The authors provide some reasons for not using institutional repositories and also problem in open access/sharing repositories.

Some of them are:
- Concern about redundancy with other modes of disseminating information.
- Confusion with copyright.
- Fear of plagiarism and having one's work scooped.
- The perception of Open Access content being of low quality while quality is big concern of reputation for any academics
- A lack of mandatory policies for depositing manuscripts
- Confusion and uncertainty about intellectual property issues
- Scholarly credit and how the material in institutional repositories would be used
- Research/ teaching materials on publicly accessible web sites are not preserved in perpetuity and also they are not maintained securely
- Publishers' policy is another factor as they do not allow posting pre-or-post refereed articles on publicly accessible web sites and
- Additional time and effort is required to make materials publicly accessible on the internet The potentially response the higher education challenges enabled by linking and sharing institutional repositories need to be documented properly

to enhance our understanding on the pedagogical potential of institutional repositories. We need to take necessary steps to solve the above concerns relating to linking or sharing institutional repositories to get the greatest benefit from these repositories in the higher education institution.

Sharing institutional repositories is a big challenge in today's higher education institutions. There are many issues related to sharing institutional repositories are discussed in the above section. Access to scientific data is hampered by structural deficits in the publication process. Data publication needs to offer authors an incentive to publish data through long-term repositories. Data publication also requires an adequate license model that protects the intellectual property rights of the author while allowing further use of the data. The 3 JISC Strategic aims include developing and providing innovative and sustainable Information and Communication Technology (ICT) infrastructure, services and practice that support institutions in meeting their mission. This can be summarized as the development, provision and use of an e-Infrastructure (Information Environment) for education and research. Also data need to be anonymized before exposed/sharing to any third party in order to protect personal information.

Conclusion:
We are likely to see the concept of institutional repositories develop in both convergent and divergent ways over the next few years. Not every institution will develop a formally managed institutional repository along the lines of DSpace. But every institution that is utilizing course management systems, library catalog systems and student portfolio systems will see increased repository like functionally in their products. The open source movement, coupled with greater network collaboration among researchers should give rise to discipline-specific federated repositories hosted by institutions, research projects or professional associations.

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