

An International Journal on Grey Literature



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‘RESEARCH AND EDUCATION IN GREY LITERATURE’

GreyNet

The Grey Journal

An International Journal on Grey Literature

COLOPHON

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About TGJ

The Grey Journal is a flagship journal for the international grey literature community. It crosses continents, disciplines, and sectors both public and private. The Grey Journal not only deals with the topic of grey literature but is itself a document type classified as grey literature. It is akin to other grey serial publications, such as conference proceedings, reports, working papers, etc.



The Grey Journal is geared to Colleges and Schools of Library and Information Studies, as well as, information professionals, who produce, publish, process, manage, disseminate, and use grey literature e.g. researchers, editors, librarians, documentalists, archivists, journalists, intermediaries, etc.

About GreyNet

The Grey Literature Network Services was established in order to facilitate dialog, research, and communication between persons and organizations in the field of grey literature. GreyNet further seeks to identify and distribute information on and about grey literature in networked environments. Its main activities include the International Conference Series on Grey Literature, the creation and maintenance of web-based resources, a moderated Listserv, and The Grey Journal. GreyNet is also engaged in the development of distance learning courses for graduate and post-graduate students, as well as workshops and seminars for practitioners.

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EDITOR'S NOTE

ENHANCED PUBLICATIONS PROJECT (EPP)

GreyNet has undertaken a project this year together with colleagues in Europe and the United States. The EPP project involves linking full-text grey literature to underlying research and post-publication data. In a way, this project seeks to circumvent the data vs. documents camp in the grey literature community by way of a middle ground provided through enhanced publications. Enhanced publications allow for a fuller understanding of the process in which data and information are used and applied in the generation of knowledge. The enhanced publication of grey literature precludes the idea of a random selection of data and information, and instead focuses on the human intervention in data-rich environments. Enhanced publications combine textual resources i.e. documents intended to be read by human beings, containing an interpretation or analysis of primary data. Enhanced publications inherently contribute to the review process of grey literature as well as the replication of research and improved visibility of research results.

The goal of this project is threefold: to enhance GreyNet's existing collection of conference preprints by adding corresponding links to research data, to include commentaries i.e. post-publication data on GreyNet's existing conference preprints in metadata records, and to establish a workflow for future GreyNet enhanced publications based on the results of this project, where permanent access to full-texts and their data enriched components are made available via persistent identifiers accessible in trusted repositories.

Each of the four partnering organizations is brought together based on their expertise and tasks they will execute during the course of the project. GreyNet will work together with INIST-CNRS (France) to devise a questionnaire and carry-out a survey among its author base in the acquisition of research data linked to conference preprints. GreyNet will facilitate data entry in the DANS Easy Repository (Netherlands) with link backs to corresponding metadata records in the OpenGrey Repository. And, GreyNet will cooperate with Pratt Institute (United States) to establish basic criteria upon which commentaries by LIS students will be compiled and added to existing metadata records.

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Grey Literature is a field in library and Information science that deals with the production, distribution, and access to multiple document types produced on all levels of government, academics, business, and organization in electronic and print formats not controlled by commercial publishing i.e. where publishing is not the primary activity of the producing body.

Developing Small Worlds of E-Science: using quantum mechanics, biological science, and oceanography for education and outreach strategies for engaging research communities within a university*

Plato L. Smith II (United States)

Abstract

The paper provides an introductory and exploratory research method for developing a data management plan strategy through the experimental approach of developing and preserving small worlds of e-science of grey literature from the physics, biological, and oceanographic research disciplines at Florida State University. The paper opted for an experimental approach of digitization, cataloging, and resource discovery in a digital content management system (DigiTool), online public access catalog (OPAC) in Aleph and OCLC WorldCat, and preservation in Florida Digital Archive (FDA), and MetaArchive while introducing connections to information science, organization, and information system theories for the development of digital curation theory through the theory building strategy of Metatriangulation. The paper provides descriptive research insight into exploring the application of information science theories, organizational theory concepts, and information systems models to the emerging field of digital curation in the development of a data management plan that includes defining digital curation, data curation, and digital preservation. Because of the chosen research approach, the research results may lack generalisability. Therefore, researchers are encouraged to further develop research. The paper aims to contribute to the body of knowledge of digital curation through OAIS Reference Model, The DCC Curation Lifecycle Model, and Data Management Model digital curation theory building through the theory building strategy of Metatriangulation. Originality/value – This paper fulfills an identified need to study how digital curation theory building via Metatriangulation can be enabled and mapped to Boyer's Model of Scholarship.

Project Background and Development

The idea for this project started as a result from the development and submission of a poster session proposal for the 31st Annual IATUL (International Association of Scientific and Technology University Libraries) Conference <http://blogs.lib.purdue.edu/iatul2010/at> Purdue University (West Lafayette, IN) and Chicago, IL, United States from June 20-24, 2010. The theme for the 2010 IATUL conference was "The Evolving World of e-Science: Impact and Implications for Science and Technology Libraries" and the titled of the poster session proposal was "Developing small worlds of e-science: using quantum mechanics, biological science, and oceanography for education and outreach strategies for engaging research communities within a university." The call for papers was received via the ACRL Science & Technology Section Discussion List <http://lists.ala.org/www/info/sts-l> on 2009-11-23, poster session proposal submitted on 2009-11-30, and accepted on 2010-01-14.

The IATUL 2010 poster session highlighted the developing digitization work of quantum physicist Dr. Paul A. M. Dirac which included select Dirac digitized works as his 1926 dissertation, relativistic quantum mechanical wave equation formulated by Dirac in 1928 written on blackboard of Dirac's former office in the Keen Building on Florida State University's campus, and mp3 of Dirac's 1979 Lecture "Why We Believe in Einstein Theory" given at Southern Illinois University Carbondale for "Albert Einstein Centennial Celebration" on March 2, 1979 to name a few. The Paul A.M. Dirac material selected and digitized for digital collection development for the IATUL 2010 poster was further developed and extended to this GL 12 article publication to include Dirac's Nobel Prize in Physics, black & white photos of Dirac teaching classes at Florida State University, principles of quantum mechanics, 1933 Solvay Congress lecture "Theory of the Positron", list of recipients for the Lucasian Chair of Mathematics at Cambridge University, and the Paul A.M. Dirac International Scholarly Certificates digital collection which includes certificates from around the world including Great Britain, India, France, Paris, Germany, China, Hungary, Ireland, and USA. In addition to the previously unpublished Dirac materials which is now available online, images of biological silica from FSU Biological Scientist, Dr. A.K.S.K. Prasad biological science research, and faculty research data from several FSU faculty from the

* First published in the GL12 Conference Proceedings, February 2011

department of earth, ocean, and atmospheric are also available online via http://digitool.fcla.edu/R/?LOCAL_BASE=GEN01-FSU01&pds_handle=GUEST FSU Paul A.M. Dirac Science Library and FSU D-Scholarship digital collections, respectively. The content and development of the online digital collections developed for the IATUL 2010 poster and GL12 presentations http://2007.ispace.ci.fsu.edu/~psmithii/GL12-2010/GL12_2010-11-05_FSU.pdf were made possible through the interdepartmental/campus partnerships, cross-disciplines research digital projects, and inter-institutional collaborations between FSU Libraries Special Collections, Dirac Science Library, FSU Libraries Digital Library Center, FSU Department of Biological Science, FSU Department of Earth, Ocean, and Atmospheric Science FSU Cataloging in Technical Services, Florida Digital Archive (Florida Center for Library Automation), and MetaArchive (Educopia).

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Special thanks to Giesele Towels, FSU Libraries DLC Library Operations Supervisor, Willa Patterson, FSU Libraries Library Associate, Sharon Schwerzel, former FSU Dirac Science Library Department Head (retired Fall 2010), Dr. Lucy Patrick, former FSU Special Collections Department Head (retired Fall 2009), Dr. A.K.S.K. Prasad, Tamara Weatherholt, FSU Serials/Metadata Librarian, Lydia Motka, Manager of Florida Digital Archive, and FSU College of Communication and Information and science discipline graduate students. The IATUL 2010 poster session that preceded and developed in to the GL12 presentation that led to the ultimate development of this article publication is the fruition of contribution of many individuals.

This article is dedicated to Sharon Schwerzel who presented the IATUL 2010 poster at Purdue University on behalf of FSU and who strongly supported and encouraged GL12 proposal submission that led to the development of this article.

Foreword

"A record if it to be useful to science, must be continuously extended, it must be stored, and above all it must be consulted" (Bush, 1945).

As We May Think (Bush, 1945) concepts of record extension, storage, and consultation are just as significant, if not more, now in 2011 as they were prophetically prolific in 1945. "Science is becoming data-intensive and collaborative" (Seidel, 2010) and the need for "a more comprehensive approach to data policy" (Marrett, 2010) is tantamount for consultation (Otlet, 1903) for maintaining, preserving, and adding value to digital research data throughout its lifecycle (DCC, 2010) not only for scientists seeking NSF funding but for all institutions and organizations concerned with emphasis on community access to data in support of more open sharing of research data (NSF, 2010). NSF's Press Release 10-077 titled "Scientists Seeking NSF Funding Will Soon Be Required to Submit Data Management Plans" dated May 10, 2010 following a May 5, 2010 meeting of the National Science Board nsf.gov/news/news_summ.jsp?cntn_id=116928, is an excellent example of a government funding agency taking an active role in addressing some of the data management issues inherent in the digital universe as addressed by Kroll & Forsman and Zverina, respectively.

"Researchers report that they struggle unsuccessfully with storage and management of their burgeoning volume of documents and data sets that they need and that result from their work. While some universities have devised new services to better manage data and other information derived from research, many researchers flounder in a disorganized and rising accumulation of useful findings that may be lost or unavailable when conducting future research" (Kroll & Forsman, 2010).

"A recent study by the International Data Corporation (IDC) said that in 2007, the amount of digital data began to exceed the amount of storage to retain it, and will continue to grow faster than storage capacity from here on. The IDC study predicts that by 2011, our "digital universe" – consisting of digitally-based text, video, images, music, etc. – will be 10 times the size it was in 2006." (Zverina, 2008).

The NSF's 2010 Press Release 10-77 was pivotal in pushing forward the data management plan agenda across institutions, organizations, and research disciplines. The NSF funding data management plan requirement underscores dedication to research, publication, open access, and education (GreyNet, 2011) while also complimenting the need for the management of research data ensuing from the NIH funded research projects impacted from introduction and implementation of The NIH Public Access Policy, Division G, Title II

Section 218 of PL 110-161 (Consolidated Appropriations Act, 2008) <http://publicaccess.nih.gov/policy.htm>. Both of these government-wide initiatives contribute to the concept of curation of data and the emerging field of digital curation. The DCC Curation Lifecycle Model "provides a graphical, high-level overview of the stages required for successful curation and preservation of data" (DCC, 2010).

Introduction

While visiting FSU Dirac Science Library Department Head at the FSU Dirac Science Library on Florida State University campus in Tallahassee, Florida, the discussion of digitizing high-use Dirac primary resource was discussed leading to the digitization of 20 international scholarly certificates and development of the Paul A.M. Dirac International Scholarly Certificates open-access, online digital collections in Fall 2010. The Dirac Science Library Department Head suggested the digitization and development of this collection due to frequent visits and photographs taken of the collection from researchers and scholars from around the world. The Science Library Department noted that science researchers and scholars particularly enjoyed viewing international scholarly certificates that represented their native countries.

Prior to, during, and after the process of digitization of select Dirac materials, the data curation process took shape, developed, and continues today as a result of the application of some of the stages required for curation from The DCC Curation Lifecycle Model. The DCC Curation Lifecycle Model was introduced to the emerging field of digital curation at The 3rd International Digital Curation Conference (IDCC) in 2007 in Washington, DC. However, Clifford Lynch's closing remarks at The 1st International Digital Conference in 2005 in Bath on curation permeates curation, The DCC Curation Lifecycle Model, and data management while also inclusive of the concept of consultation (Otlet, 1903, Bush, 1945). Lynch (2005) describes curation as:

- Curation as a finite process, with handover to preservation as its end point
- Curation as a whole life process, with evolving objects, and
- Curation as managing a growing, living collection

Curation has also been described as including "stewardship, resource management, access, presentation, active care, involves long time and preservation" (Rusbridge, 2006: 2007). Both Lynch and Rusbridge concepts of curation guided the development of the quantum mechanics, biological science, and earth, ocean, and atmospheric digital collections contained in this article. Due to varying degrees of copyright management, faculty contribution participation, access to and processing of "born digital" and "digitized" research data, each one of these three digital collections are in various stages required for successful curation and preservation. Throughout the research process of developing these digital collections, Dr. Kathleen Burnett, Florida State University College of Communication and Information (CCI) faculty, introduced Boyer's Model of Scholarship in LIS 6289 Doctoral Seminar Education Information Studies Spring 2009, and Fall 2010 purchase of the Digital Curation Centre DCC Digital Curation 101 training manual introduced The DCC Curation Lifecycle Model mapping to the OAIS reference model. However, in order to attempt to apply LIS theories to The DCC Curation Lifecycle Model and glean, process, and apply multiple concepts, models, and theories throughout the research process while exploring the emerging field of digital curation in the development of the three digital collections for this project explored the theory-building process of Metatriangulation from the field of organizational theory first explored serendipitously during a doctoral class at UNC-Chapel Hill in 2002. The remainder of this article is separated into three topical sections taken from the 31st IATUL 2010 conference, followed by a bibliography.

Section I - Understanding the needs, challenges, and opportunities of computational scientific research and the implications for the scientific and technological library community

Collection #1: Quantum Mechanics – Paul A. M. Dirac Collection – Paul A.M. Dirac is recognized by most authorities as one of the greatest theoretical physicists of the 20th century and the father of the field of quantum mechanics. Prior to this project and paper, none of the current digitized Dirac lectures, notes, and 1926 dissertation existed online and/or in digital format. The Dirac is a current, work-in-process digitization project that includes access via FSU Libraries OPAC (Online Public Access Catalog), OCLC WorldCat, and digital content management system via DigiTool. Selected Dirac digitized materials that was once inaccessible to the non-campus community is now open-access available.

- Current plans – continue to digitize Dirac works 2000+ objects in which FSU hold copyrights and secure copyright permissions from the estate, family, publishers, and

copyright holders on Dirac materials to create a more diverse, robust, and critical mass Dirac collection.

- Future plans – create Florida Digital Archive (FDA) Metadata Encoding Transmission Standard (METS) eXtensible Markup Language (XML) Submission Information Package (SIP) using the open-source METS creation tool created by the University Florida of all Dirac archival master files for ingestion and preservation in FDA. May also consider MetaArchive as a redundant distributed digital preservation strategy.

Collection # 2: Biological Science - Dr. A.K.S.K Prasad – Dr. A.K.S.K. Prasad is a biological science courtesy faculty member with 29 years experience in the Systematics of micro algae (Botany), Diatom systematics, phytoplankton systematics, Algae Blooms in freshwater and coastal waters. Dr. Prasad continues to work with the FSU Libraries to develop, promote, and preserve select images of biological silica. The images of biological silica digital collection is a growing collection available online in FSU Libraries OPAC, OCLC WorldCat, digital content management system via DigiTool, preserved via FDA and MetaArchive. This collection was developed as demo preservation digital collection to include senior management for FSU Libraries to join FDA (free) and was the first successful FSU Libraries collection preserved via MetaArchive in 2009 even though FSU has been a member of MetaArchive since 2004.

- Accomplishments – assisted faculty member with the completion of recent DEP grant funded project for manual publication. Faculty contributed success to assistance from the Digital Library Center is organizing some of his research data for publication report. First faculty digital collection to be preserved via FDA and MetaArchive. First digital collection to received written copyright permission from faculty granting FSU Libraries Digital Library Center permission to make select research data open access via DigiTool. This digital collection has been highlighted and presented at several national and international conferences whereas the collection once existed on CDs in the faculty member's office.
- Current plans – awaiting return of faculty member from India, increase faculty contribution participation (over 6000+ unprocessed images of biological silica), and active participation of faculty to provide more research data, field notes, and geographical technical, metadata information.
- Future plans – work with faculty with research data from 2year BP funded research of the oil spill on diatoms and biological silica in the Gulf this semester. Extend and expand scope of digital curation of images of biological silica.

Collection # 3: Earth, Ocean, and Atmospheric Science – The Earth, Ocean, and Atmospheric Science digital collection contains select digitized oceanographic technical reports contributed by several faculty member for digitization and institutional repository population. This collection once existed offline in faculty members' offices inaccessible to the public now exists online accessible via FSU Libraries OPAC, OCLC WorldCat, and digital content management system.

- Current plans – reestablish faculty contribution participation with newly merged departments as a recent of last year's layoff of FSU faculty and merging of select departments including oceanography, anthropology, and communication to name a few.
- Future plans – acquire new and more content while applying stages of The Digital Curation Lifecycle Model to the development of newer digital collections.

Section II - Tools for e-science initiatives, including the development of new frameworks, platforms, and systems for discovery, access, management, and preservation of data; strategies for metadata management, repository structures; and digital data curation

- All three digital collections that once resided offline now exist online in a digital content management system with access via OPAC and OCLC WorldCat.
- FDA digital preservation and MetaArchive distributed digital preservation strategy have been applied to collection # 2 with future application to collections #1, #2, and future collections.

- FSU Libraries purchased BePress Digital Commons in Fall 2010 as part of new and improved IR solution to the management of scholarly output including faculty pre-prints, ETDs, grey literature, and research data.
- Fall 2010 DLC begin exploring and using the METS creation tool to create METS XML SIP for FDA ingestion for FDA preservation. This new workflow includes data curation and digital curation in the development of data management of research data, born digital, and digitized content.
- Boyer's Model of Scholarship is being applied to all collections in tandem with Spring 2011 Digital Library graduate course being taught by CCI faculty, Dr. Sanghee Oh. Boyer's Model of Scholarship includes:
 1. Discovery – Build new knowledge through traditional research
 2. Integration – Interpret the use of knowledge across disciplines
 3. Application – Aid society and professionals in addressing problems
 4. Teaching – Study teaching models and practices to achieve optimal learning
- Applied aspects of the Conceptualise, Create or Receive, Appraise & Select, Ingest, Preservation Action, Store, Access, Use, & Reuse, Transform, Curate, Preserve, Preservation Planning, Representation Information, and Description stages from The DCC Curation Lifecycle Model.
- The Submission Information Package (SIP), Archival Information Package (AIP), and Dissemination Information Package (DIP) part of The Open Archival Information System (OAIS) reference model international standard (ISO) 14721:2003 preservation planning & administration via icpsr.umich.edu/icpsrweb/ICPSR/curation/aboutois.jsp maps to respective required stages in The DCC Curation Lifecycle Model and Boyer's Model of Scholarship whenever scientists/curators/users interface in managing research data from producer (scientist) to data management (curator) to access (discovery) to consumer (teaching).

The development of a digital curation theory building framework is necessary to address the varied approaches in cost/benefit studies, tools, and methodologies focusing on long-lived data (Beagrie, 2010) in keeping research data safe in the emerging field of digital curation. However, despite the continual advancement in research and development within the emerging field of digital curation more work needs to be done on developing a theoretical framework with which to further build and develop the emerging field of digital curation. cursory review of digital curation literature reveals digital curation and digital preservation terms sometimes being used synonymously and interchangeably. "To use them as synonymous is to abuse them. This [is] theoretically incorrect and pragmatically dangerous" (Callaos & Callaos, 2002). Schutt (2006) triangulation and Lewis & Grimes (1999) metatriangulation are two research method approaches, which could be employed to explore and contribute towards, work in the development of a theoretical correct and pragmatically sound framework within the emerging field of digital curation. Future research will explore the concept of digital curation metatriangulation (DCM) for the identification and analysis of digital curation exemplars.

Section III - Local, regional, national and international collaborations related to data management

- Local collaborations include FSU Dirac Science Library, Special Collections, Department of Biological Science, Earth, Ocean, and Atmospheric Science
- Regional collaborations include Florida Center for Library Automation (FCLA), Florida Digital Archive (FDA), University of Florida (UF)
- National collaborations include Educopia/MetaArchive
- International collaboration potential with KRDS in the UK initiated 2011-01-05

In conclusion, all the research work, collaborations, digital collections development, digital curation activities, and data management work involved beginning from SPARC 2008, IDCC 2008, ACRL 2009, OR 2009, GL11 conference poster, 31st IATUL 2010 conference poster presentations to the GL12 presentation were used to in one way or another to engage scholars and faculty from 2008 to present as part of outreach strategies that finally contributed to decision for FSU Libraries to purchase BePress Digital Commons in Fall 2010, specifically to increase the visibility, discoverability, and accessibility of scholarly research at FSU. BePress Digital Commons was selected as an improved institutional repository (IR) solution for FSU Libraries for implementation in 2011. With the purchase of this product,

senior management recommended the development of an IR implementation charged with developing work flows, policies, procedures, campus partners, and guiding IR content contribution. The IR implementation team in addition to currently working to acquire faculty participation and representation from The Graduate School, Humanities, English, and Science research disciplines has already acquired representation and senior management participation from the following campus partners for 1st quarter of 2011.

- College of Communication and Information (CCI) – includes tenured faculty
- College of Law
- College of Music
- College of Medicine
- Biological Science
- Earth, Ocean, and Atmospheric Sciences
- Undergraduate Honors in the Major
- Dirac Science Library and Goldstein Library

The IR implementation team will help to develop and implement a quality IR program for the display of research data and information. This project paper will be extended to further explore and develop digital curation metatriangulation and the difference between data and information as represented by Bjorn Langefors infological equation of "I = I (D, S, T), where I stands for information, D data, S the recipient prior knowledge as result of the individual's life experience" (Johannesson & Söderström, 2008).

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Content-based Document Recommender System for Aerospace Grey Literature: Experimental Testing and User Opinion Survey *

K. Nageswara Rao and V.G. Talwar (India)

Abstract

The study aims to test content-based document recommender system (CODORS) with sample data to retrieve most relevant technical documents without necessarily matching title terms and closely related to particular search term(s). The CODORS system was put open for users to search and obtain recommendations with weighted relevance ranking and also allowed to compare the results obtained through general OPAC search engine for the same keywords. Based on the findings of the experimental testing and evaluation, some conclusions have been drawn: The results exhibited that the CODORS search provided many more relevant documents and increased the recall value as compared to general OPAC search and also revealed documents that were retrieved for a given query through OPAC search appeared at different places-top, middle or end of the ranked list of documents - generated through the CODORS search for the same query.

The Research Problem

The need for enhancing the recall value of the results retrieved motivated the researcher to search for a technique that would retrieve more documents for a given query, particularly grey literature on aerospace. Some retrieval models generally rank retrieved documents as relevant to the query according to some criteria and such models are called as ranking models¹. The study of advances made in IR systems, more particularly retrieval models such as Boolean model, vector space model, and probabilistic retrieval models, showed not only the possibility of retrieving more relevant documents for a given query, but also ranking of these documents so as to facilitate the user to select the relevant documents based on the objectivity. It also provided a cut-off point in case if large number of relevant documents were retrieved. With this aim in mind, the authors chose the research problem entitled, "Designing Content-based Document Recommender System for aerospace grey literature".

The authors, hence, developed a test-bed database of grey literature on aerospace engineering using 'Dialog OnDisc Aerospace Database' brought out by American Institute of Aeronautics and Astronautics (AIAA) for this purpose. Further, the authors developed a recommender system known as Content-based Document Recommender System (CODORS)² using Boolean operators. The recommender system so developed was put to test using the above database and results of CODORS searches were compared with the retrieved output of the normal OPAC searches. The major issues of concern in designing this recommender system were: to increase the search capability and to get ranked list of documents retrieved by automatically assigning weightage to each document retrieved.

Objectives of the Study

The objectives of the study are:

- To understand and to assess the capability of general OPAC to retrieve grey literature relevant to scientists working in the field of aerospace engineering and allied sciences.
- To design CODORS using first order descriptors in aerospace engineering and allied sciences based 276 DESIDOC J. Lib. Inf. Technol., 2011, 31(4) on individual user search words (profiles) to facilitate easy access to and optimum utilisation of relevant information in the form of grey literature.

Hypothesis

Although the objectives of the study are clear, there were chances that the study may deviate from the track as the research progresses. Hence, it was necessary to have a hypothesis running through the objectives. For the present study, the following hypothesis was formulated:

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H+: Use of CODORS as compared to general OPAC searches results in retrieving comprehensive, highly relevant and ranked documents in the field of aerospace engineering and allied sciences.

Methodology Of The Study

The study adopted was the experimental testing and user opinion surveys. It began with the development of bibliographic database of papers of conference proceedings relevant in the field of aerospace engineering and allied sciences. Titles of the conference papers and associated descriptors were considered essential for the study. As the efficiency and accuracy of the system to be developed depended solely on the suitable descriptors representing the thought content of the documents, the descriptors assigned in the source, i.e., Dialog OnDisc Aerospace Database were used as these descriptors were assigned using NASA thesaurus. The next step was the development of CODORS using 'first-order descriptors'. The steps involved in the development of CODORS are described.

- S1: Extraction of individual search words (terms) entered by the users.
- S2: Retrieval of titles of all documents having all the search words (terms) entered by the users.
- S3: Retrieval of all descriptors that are assigned to all documents retrieved at step S2.
- S4: Formulation of weighted vector of descriptors as it is the base of user profile. The elements of the vector are termed as 'first-order descriptors'. Weights for the descriptors are calculated based on number of occurrences of individual descriptors with reference to total number of descriptors retrieved at step S3.
- S5: Mining of all documents titles from the database, which are having at least any one of the 'First Order Descriptors' retrieved at step S3.
- S6: With the help of matching descriptors, calculation of the percentage weightage of each document retrieved at step S5.
- S7: Calculation of "Boosting Factor" with the help of highest ranked document from CODORS results and adding to every document in the results.
- S8: Displaying the documents retrieved at Step S7 on the basis of decreasing order of relevance.

System Testing with Sample Search Queries

Exercising formal testing of information retrieval systems was carried out initially in Cranfield experiments in early 1960s. The aim of Cranfield research was to find ways to improve the retrieval effectiveness of IR systems through better indexing languages and methods³. For performance comparisons, quantitative measures used in the Cranfield II experiments were recall and precision, which are the derivative of the concept of relevance⁴. A series of IR experiments were conducted on the SMART system by Gerald Salton^{5,6}. A series of experiments, known as TREC (Text TEtrieval Conference), were started in 1992 and were considered as real experimental approach to information retrieval evaluation. Having designed the CODORS recommender system, it was put to test. As many as 124 search tests were conducted using different key terms ranging from broader to narrower subject fields in the area of aerospace engineering. The hit results of general OPAC searches and CODORS searches were studied, tabulated, and compared to assess the usefulness of CODORS.

Summary of Findings with Sample Search Queries

The findings of the experiments conducted on the test database using CODORS recommender system in actual environment are summarised here under:

- (i) General OPAC search could retrieve documents ranging between 2 to 10 for a given query. The search under CODORS system retrieved 10-500 documents and even more for a given query. It, however, depends on the subject area of the query. That means the recall value of the searches under CODORS is found to be much greater compared to that of general OPAC searches.
- (ii) The CODORS searches provided ranking of all the documents retrieved and this ranking is based on the weightages of the document relevance for a given query.
- (iii) In the ranking order, majority of the documents retrieved from the general OPAC are normally placed DESIDOC J. Lib. Inf. Technol., 2011, 31(4) 277 either somewhere in the top, middle or in the end of the ranked list of documents which means many more relevant documents are left un-retrieved, in case of simple OPAC search.

Opinion Survey of Users on Codors

The questionnaire is an important survey technique for gathering data from users during recommender system evaluation experiments. Questionnaire is structured research instrument which is used to collect research data in a face-to-face interview, self-completion survey, telephone interview or Web survey. It consists of a series of questions, which may be in form, on interview schedule on paper, or on a webpage⁷.

The system was thrown open to the users to enable them to use CODORS searches and thereby test the usability of this recommender system in actual environment. The scientists were provided URLs of both general OPAC and CODORS on Intranet of Defence Research and Development Laboratory (DRDL) and requested to search their required information relating to grey literature. To assess and confirm the usability of the recommender system-CODORS-in actual environment an opinion survey of users was conducted through structured questionnaire. As many as 27 questions relating to various aspects of information search including use of OPAC and CODORS were provided in the questionnaire.

The questionnaire comprised closed questions that provide a fixed set of responses with which users must respond such as more relevant, most relevant and not relevant, etc. The questionnaire was distributed to 150 scientists and technocrats who are the regular users of the library. All the 150 users responded to the questionnaire. These questionnaires have been tabulated, analysed and results have been reported in succeeding sections.

Analysis of Opinion Survey

Familiarity of Users with Online Public Access Catalogue

Users were asked to furnish to what extent they are familiar with Online Public Access Catalogue (OPAC). Table 1 shows users opinion on their familiarity with OPAC of libraries. Out of 150 users, 78 (52 per cent) respondents mentioned that they are familiar with OPACs, 71 (47.33 per cent) respondents said that they are very familiar with OPACs and 1 (00.67 per cent) respondent stated that he is not very familiar with OPACs.

Table 1. Familiarity with OPAC

Opinion	No. of respondents	Percentage
Not very familiar	1	00.67
Familiar	78	52.00
Very familiar	71	47.33

Relevance of Documents Retrieved Using Simple OPAC

Opinions of users about the relevance of documents retrieved through OPAC searches were collected under 5 options as shown in Table 2. Table 2 depicts that 86 (57.33 per cent) respondents mentioned that the results are relevant between 50-74 per cent, 60 (40 per cent) respondents said that the results are relevant between 75-99 per cent and 4 (2.67 per cent) respondents stated that the results are relevant between 25-49 per cent. No user mentioned that the results were 100 per cent relevant, and they were less than 25 per cent relevant.

Table 2. Relevance of documents retrieved using simple OPAC

Opinion	No. of respondents	Percentage
100 per cent relevant	0	00.00
Between 75-99 per cent relevant	60	40.00
Between 50-74 per cent relevant	86	57.33
Between 25-49 per cent relevant	4	02.67
Less than 25 per cent relevant	0	00.00

Display of Documents with Relevance Ranking in OPAC Search

To the question whether results of general OPAC searches are displayed in ranked order giving their weightages of relevance, all 150 (100.00per cent) respondents answered that the search results were not displayed with relevance ranking.

Retrieval of Results in OPAC Searches where Key Terms did not Match Titles

Users were asked to furnish their opinion on results of OPAC searches in cases where the key term keyed in by them did not match the title of document. All 150 (100 per cent) respondents answered that there were no hits and the search results were not displayed.

Users' Knowledge of Filtering Systems for Filtering Relevant Information

To a question about the knowledge of filtering systems 125 (83.33 per cent) respondents expressed that they were not aware of any filtering system for filtering relevant information and 25 (16.67 per cent) respondents said that they were aware of filtering systems. Table 3 depicts the same.

Table 3. Knowledge of filtering systems for filtering relevant information

Opinion	No. of respondents	Percentage
Aware	25	16.67
Not aware	125	83.33

Users' Knowledge about Thesaurus and its Importance in Information Retrieval

Table 4 depicts that 119 (79.33 per cent) respondents were not aware of thesaurus and its importance in information retrieval. Thirty-one (20.67 per cent) respondents were aware of the importance of the thesaurus.

Table 4. Knowledge about thesaurus and its importance in information retrieval

Opinion	No. of respondents	Percentage
Yes	31	20.67
No	119	79.33

Users' Knowledge about Concept-based Searching

Table 5 shows that 120 (80 per cent) respondents were not having the knowledge about concept-based searching and 30 (20 per cent) respondents were having the knowledge about concept-based searching.

Table 5. Knowledge about concept-based searching

Opinion	No. of respondents	Percentage
Yes	30	20
No	120	80

Users' Knowledge of Recommender Systems for Identifying Relevant Information

To a question about the knowledge of recommender systems for identifying relevant information, all 150 (100 per cent) respondents replied that they were aware of recommender system.

Users' Awareness of Content-based Document Recommender System

To a question whether the users are aware of CODORS, all 150 (100 per cent) respondents replied positively and said that they were aware of CODORS.

Usage of CODORS for Searching Required Information by the Users

Users were asked whether they use CODORS for searching required information. All 150 (100 per cent) respondents replied positively and said they were using CODORS for searching information of their requirement.

Usage Frequency of CODORS for Searching Required Information

Opinion on usage frequency of CODORS was collected from the respondents. Seventy-seven (51.33 per cent) respondents used CODORS 'once in a week', followed by 39 (26 per cent) respondents who used it twice in a week', 19 (12.67 per cent) respondents who used it 'once in 2 weeks', and remaining 11 (7.33 per cent) respondents who used it rarely (Table 6).

Table 6. Usage frequency of CODORS for searching required information

Opinion	No. of respondents	Percentage
Daily	0	00.00
Thrice in a week	4	02.67
Twice in a week	39	26.00
Once in a week	77	51.33
Once in 2 weeks	19	12.67
Rarely	8	05.33
Not responded	3	02.00

Usefulness of CODORS Results

Table 7 depicts users' opinion about the usefulness of CODORS results. Table 8 shows that 148 out of 150 representing 98.67 per cent of the total found the results useful and none have found them not useful. However, 2 (1.33 per cent) respondents have not responded to the query.

Table 7. Usefulness of CODORS results

Opinion	No. of respondents	Percentage
Useful	148	98.67
Not useful	0	00.00
Not responded	2	01.33

Expected Number of Hits from CODORS Search

Users were asked whether they had expected specific number of results before they completed their search through CODORS and if so whether the results obtained were more than the expectation and otherwise less. Table 8 reveals that 134 (89.33 per cent) respondents got more results than they expected, 16 (10.67 per cent) respondents got expected number of results. But none of the user experienced hit results less than expectation.

Table 8. Expected number of hits from CODORS search

Opinion	No. of respondents	Percentage
Expected	16	10.67
More than expected	134	89.33
Less than expected	0	00.00

Relevance of CODORS Search Results

Respondents were asked to furnish their opinion about the relevance of the results of CODORS search. Table 9 depicts that for 72 (48.00 per cent) respondents the CODORS search results are relevant 'between 51-75 per cent', for 66 (44.00 per cent) respondents the results were relevant 'between 76-99 per cent', for 11 (7.33 per cent) respondents the results were relevant 'between 26- 50 per cent' and for 1 (0.67 per cent) respondent the results were 100 per cent relevant. None of the respondent expressed that results are below 25 per cent and as well not relevant.

Table 9. Relevance of CODORS search results

Opinion	No. of respondents	Percentage
Not relevant	0	00.00
< 25 % relevant	0	00.00
Between 26-50 % relevant	11	07.33
Between 51-75 % relevant	72	48.00
Between 76-99 % relevant	66	44.00

Ease of use in Searching CODORS

Users were asked to state whether searching information through CODORS is easy and if so to what extent? Table 10 depicts that 123 (82.00 per cent) respondents expressed that searching for information using CODORS is 'very easy', followed by 22 (14.67 per cent) respondents who said that it is 'moderately easy', 5 (3.33 per cent) respondents who opined that it is 'easy to some extent', and no respondent who mentioned 'Not easy' option.

Table 10. Ease of use in searching CODORS

Opinion	No. of respondents	Percentage
Not easy	0	00.00
Easy to some extent	5	03.33
Moderately easy	22	14.67
Very easy	123	82.00

Frustration Using CODORS by the Users

Users were asked to give their opinion if they got frustrated while using CODORS. There were 148 respondents representing 98.67 per cent of the total who opined that they were not frustrated. Only 2 (1.33 per cent) respondents expressed that they were frustrated (Table 11).

Table 11. Frustration while using CODORS

Opinion	No. of respondents	Percentage
Yes	2	01.33
No	148	98.67

Satisfaction about Display of Relevance Ranking of CODORS Search Results

When asked the users whether they were satisfied with the display of relevance ranking of CODORS results, all 150 (100 per cent) expressed positively.

Usefulness of CODORS for Finding Relevant Documents on a Particular Subject of Interest

Opinion expressed by the respondents on usefulness of CODORS for finding relevant documents on a particular subject of interest revealed that all 150 (100 per cent) respondents were positive opined that the CODORS is useful for finding relevant documents on a particular subject of interest.

Comprehensiveness of CODORS Results on a Particular Subject of Interest

All 150 (100) respondents expressed that CODORS search on a particular subject of interest provided them comprehensive search output.

Results of CODORS Searches with Key Terms that did not Match Title Terms

Users were asked to furnish whether they experienced hits in CODORS searches where in the key terms they used did not match with title of the document. One hundred forty-five

(96.67 per cent) respondents stated they experienced hit results though key terms did not match with title of the documents. However, 5 (3.33 per cent) respondents expressed that they did not experienced hit results wherever the key terms did not match with terms in the title (Table 12).

Table 12. In CODORS results, key terms that did not match title terms

Opinion	No. of respondents	Percentage
Obtained hit results	145	96.67
Did not obtained hit results	5	03.33

Percentage of Success in CODORS Results when Key Terms did not Match Title Terms

The authors collected the opinion under five options about the percentage of success in CODORS searches when key terms did not match title terms and tabulated the same. Table 13 revealed that 93 (62.00 per cent) respondents rated the success between 50-74 per cent, 35 (23.33 per cent) respondents rated the success between 75-99 per cent, and 22 (14.67 per cent) respondents rated the success between 25-49 per cent. None of the respondent has rated the success below 25 per cent and as well 100 per cent.

Table 13. Percentage of success in CODORS results when key terms did not match title terms

Opinion	No. of respondents	Percentage
Less than 25 % success	0	00.00
Between 25-49 % success	22	14.67
Between 50-74 % success	93	62.00
Between 75-99 % success	35	23.33
100 % success	0	00.00

Searching CODORS for Document of Highest Relevance

For a question whether they searched for results in CODORS keeping in mind a document of highest relevance, all (150; 100 per cent) respondents expressed positively.

Retrieving More Documents in Ranked Order in Addition to the Document of Interest

User's opinion was sought on the retrieval of more relevant references in ranked order in addition to one that they considered has highest relevance all 150 (100.00 per cent) respondents opined positively.

Retrieval of Documents by CODORS Ranked Above the One Considered More Relevant

Users were also asked if they had experienced more number of hits than that of the one they had considered most relevant, did they found such documents still better relevant. Table 14 shows that 148 respondents out of total 150 representing 98.67 per cent expressed positively and said retrieval of documents by CODORS were ranked above the one they considered most relevant and only 2 (1.33 per cent) respondents mentioned that retrieval of documents by CODORS were not ranked above the one they considered most relevant.

Table 14. Retrieval of documents by CODORS ranked above the one considered more relevant

Opinion	No. of respondents	Percentage
Yes	148	98.67
No	2	01.33

Relevance of Recommendations by CODORS Ranked above the Document the User Considered Relevant

User were asked to furnish their opinion on how relevant were the documents that were displayed by CODOR search and ranked above the document that the user considered most relevant. Table 15 presents that 89 (59.33 per cent) respondents opined that the CODORS recommendations ranked above the one considered relevant were more relevant and 59 (39.33 per cent) respondents opined that CODORS recommendations were most relevant and 2 (1.33 per cent) respondents mentioned that the CODORS recommendations were not better relevant.

Table 15. Relevance of CODORS recommendations ranked above the document the user considered relevant

Opinion	No. of respondents	Percentage
Most relevant	59	39.33
More relevant	89	59.33
Not relevant	2	01.33

Summary of Findings using Opinion Survey

The findings of the survey sought by the users about the usability of CODORS recommender system in actual working environment are summarised below:

- (i) All (150; 100 per cent) aerospace users of RDL are aware of recommender systems and particularly CODORS.
- (ii) All (150; 100 per cent) users use CODORS to search information of their requirement.
- (iii) Out of 150 users, who use CODORS, 77 (51.33 per cent) respondents use it once in a week, 39 (26 per cent) use it twice in a week, 19 (12.67 per cent) use it thrice in a week, 4 (2.67 per cent) use it once in two weeks and 8 (5.33 per cent) users use it rarely. Remaining 3 (2 per cent) users have not responded.
- (iv) One hundred forty-eight out of 150 representing 98.67 per cent of the total respondents opined that they did found useful and interesting documents through CODORS search and remaining 2 (1.33 per cent) users have not responded to the query.
- (v) One hundred thirty-four out of 150 representing 89.33 per cent of the total respondents have expressed that the hit results from the CODORS search were more than they expected and for remaining 16 (10.67 per cent) respondents the hit results were as expected by them.
- (vi) For 72 respondents representing 48 per cent of the total, the retrieved documents were relevant between 51-75 per cent, for 66 (44 per cent) users the relevancy of documents ranging between 76-99 per cent, for 11 (7.33 per cent) users the relevancy was between 26-50 per cent and for 1 (0.67 per cent) user the relevancy of documents retrieved was 100 per cent.
- (vii) One hundred twenty-three users representing 82 per cent of the total are of the opinion that the CODORS search is very easy as against 22 (14.67 per cent) users who opined that it is moderately easy and for 5 (3.33 per cent) users, CODORS search is not easy.
- (viii) One hundred forty-eight representing 98.67 per cent of the total users expressed that they never felt frustrated while using CODORS as against 2 (1.33 per cent) users who felt frustrated.
- (ix) All (100 per cent) users have been convinced with display of percentage relevance ranking of the results of CODORS search.
- (x) All (100 per cent) users expressed that CODORS is useful for finding relevant documents on the subject of their interest.
- (xi) All (100 per cent) users opined that CODORS results on the subject of their interest were comprehensive.
- (xii) One hundred forty-five users representing 96.67 per cent of the total experienced that they could get hit results from CODORS search through the key terms they used which did not match with terms in the titles of documents retrieved. The remaining 5 (3.33 per cent) did not experience this situation.

- (xiii) The percentage of success rate of retrieved results from CODORS was 50-74 per cent for 93 (62 per cent) users, 75-99 per cent for 35 (23.33 per cent) users and between 25-49 per cent for 22 (14.67 per cent) users.
- (xiv) All users (100 per cent) searched information using CODORS keeping in mind its highest relevance. In all such cases all (100 per cent) users experienced search output of not only those documents in mind but also additional documents.
- (xv) One hundred forty-eight out of 150, representing 98.67 per cent of the total respondents expressed that they obtained documents ranked higher than that of the one they had considered more relevant. Among these 148 users who obtained higher ranking documents, 89 (59.33 per cent) expressed that such documents were more relevant, 59 (39.33 per cent) said they were most relevant and only 2 (1.33 per cent) expressed that there was not much difference in the relevance between the documents ranked higher and the document they considered most relevant.

Conclusions

Designed CODORS converts the terms expressed by the user in natural language automatically into subject descriptors, carry on search, rank documents and retrieve. The document ranking is automatically done by the system on the basis of weightages calculated based on the occurrences of number of subject descriptors, which are assigned to each title of the document in the collection. The results are sorted on relative relevance ranking and are presented to the user for maximum utilization of technical resources that are otherwise hidden in the database collection. The CODORS was put to test by conducting repeated searches using variety of descriptors/key terms relating to general and specialized subject areas in the field of aerospace engineering. The results exhibited that the CODORS search provided many more relevant documents and increased the recall value as compared to general OPAC search. It also revealed those documents that were retrieved for a given query through OPAC search appeared at different places - top, middle, or end of the ranked list of documents generated through the CODORS search for the same query. The system having put for use in the actual environment revealed the encouraging results. The results of the opinion survey covering 150 regular users of DRDL library correlated with the results of the experimental test and found highest usability as it provided not only expected relevant documents but also more relevant documents giving ranked weightages.

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Grey Literature in Engineering Sciences and Technology and its Use Pattern in the Research Institutions in India: The Case Study of Karnataka State*

N. Chowdappa and C.P. Ramasesh (India)

Abstract

The paper is based on the survey research undertaken during 2008-2010. The availability of GL collections and its use pattern in the Recognised Research Centres of Visvesvaraya Technological University (VTU) have been analysed on the basis of the responses of the librarians and the personal observation of the situation in the libraries. A detailed attempt is also made to capture the responses of the users on the use pattern of GL. The users constitute the faculty members engaged in supervising the research programmes, and the research scholars who have registered for doctoral research. The extent of the use of the 6 types of conventional form of GL: theses, dissertations, institutional publications, trade literature, technical reports and proceedings of conferences, seminars and workshops have been studied.

Further, the research covers aspects involved in building need based GL collections. Habits of the faculty in visualizing the recent releases of GL and the trends in exploiting the GL collections of the local and regional libraries have been depicted. The research suggests for the creation of databases of GL, resource sharing and development of digital repositories of theses and proceedings of conferences and seminars, for which increased demand is noticed from the user community. The study also captures the training needs of the working librarians and the user community for better access and use of GL.

Keywords: Use Pattern; Resource Sharing; Engineering Sciences; Orientation Programme

Introduction: The grey literature has a great significance in supporting ongoing academic and research initiatives especially, in the disciplines of engineering sciences and technology. It is produced mainly by researchers and practitioners, in fact more quickly, more detailed with greater flexibility than white literature. Grey literature includes standards, specifications, technical notes, conference proceedings, patents, trade literature, work manuals, work flow-charts, institutional reports, plans and lay-outs and the term "Grey" in the professional environment is "unconventional" "informal" "informally published" "fugitive" and even "invisible". Auger (1998, p.3) includes in the purview, reports, technical notes, theses, trade literature, preprints etc. In his definition all of which are characterized by: poor bibliographic control and information; low print runs and a non-professional layout and format; difficult to obtain, as they are not available through normal book selling channels.

Scope of the Study: The literature study reveals that till now no study has been done on grey literature available in engineering colleges in India. The way they are organized to facilitate easy access, and to what extent users are using these resources, though significant, are yet to be understood. The study also unfolds the use pattern of GL which will help to find new approaches for facilitating better access to the grey materials. The study focuses on the six categories of printed grey literature available in the holdings of these Recognised Research Centres in the State of Karnataka: theses, dissertations, institutional publications, trade literature, technical reports and proceedings of conferences, seminars and workshops.

Theses: Researchers and scholars in the academic institutions and universities take up research programmes and finally come out with the research reports / theses for the award of doctoral degrees. These reports constitute unpublished sources of primary information and become property of the universities. Theses are considered to be vital as they carry in depth studies indicating objectives, methodology, hypotheses, and findings of research encompassing up-to-date statistical data, citations and information pertaining to the narrow field of study. Theses are valuable because they are original studies, and subject to strict review.

Dissertations: By and large, master's degree students take-up minor research projects as part fulfillment of their degree programmes and submit the dissertations to the academic institutions. Studies in dissertations cover small area, involving limited population samples,

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and the research work gets completed within the stipulated semester period. Dissertations cover all issues such as methodology, scope and findings of research, including up-to-date reading list, usually useful in case of similar project works.

Institution Publications: Every institution, whether academic or research brings out number of in-house publications for internal circulation and reference. Annual reports, budget reports, academic progress reports, quality assessment reports, audit reports, reports covering academic and research programmes, including extension programmes and publications covering infrastructure development, human resource development, and training facility fall into this category. The institution publications form vital source of information giving details on the background/historical development of the institution. Usually, scholars working in the same institution access them for facts and figures.

Trade literature: Manufacturing and service sectors bring-out regularly the publications in the form of book-lets, catalogues, brochures and guides. They cover various products and services of industries, laboratories and manufacturers giving specific details pertaining to models, components, prices, warranty, mode of delivery and so forth. Users refer to these literature to know the latest products, composition, models and prices.

Technical Reports: Industrial and research institutions regularly bring-out report literature which carry experimental procedure, production data, operating plans, flow-charts, drawings, mainly dealing with technological specifications useful for engineers and technologists. By and large, research organizations prepare technical reports as their outcome of research activities, addressing a particular problem. Technical reports are usually very rich in experimental detail according to the MAGiC Project (Needham, 2002, p.20). Sometimes, institutions apply colour coding for easy identification and circulation and immediate reference. Technical reports are the most valuable source of grey literature useful for research and development in any given field.

Proceedings of Conferences, Seminars and Workshops: Academicians and scientists belonging to a particular discipline come together on a common platform to discuss and deliberate on a particular subject and come-out with recommendations. Before/after the conferences or seminars usually the professional bodies/societies/associations bring out the proceedings. The proceedings carry research articles covering up-to-date data and information, contributed by many scholars and hence, form very useful tool to know the current trends and developments (Ramadevi, 2006, pp.53-54). Proceedings of the workshops gives practical details and step-by-step guidelines usually circulated among the participants before the conduct of practical orientation or training sessions, emphasizing mainly on hands-on experience.

Objectives

- To know the availability of grey literature in the engineering institutions.
- To assess the use pattern of grey literature by the faculty supervisors and research scholars and further, to suggest methods to be adopted for facilitating easy access.
- To know the extent of sharing of the GL collections of regional libraries. To comprehend the training requirements of the librarians and users for better access and use of grey literature

Methodology

The study began with a detailed and extensive literature search. Considering the availability of the infrastructure facility and the qualified faculty, 65 engineering colleges have been identified for research programmes out of 171 engineering colleges. The primary data relating to the availability and organization of grey literature in the libraries of the Recognised Research Centres have been collected through questionnaire from the librarians. The researcher also visited all these centres and observed the grey collection and its organisation. After having received the filled in questionnaires, the data was tabulated and analysed. The second questionnaire was designed and administered to all the users, the faculty members who are engaged in supervising the doctoral programmes and the research scholars who have registered for Ph.D programme. The data thus obtained through the questionnaires have been analysed in the light of the objectives. The entire population covered in the study is 930 research scholars and 340 faculty guides. The percentage of total users covered in the study is 84.6.

In India, the All India Council for Technical Education (AICTE) has taken initiative in providing access to scholarly publications, including the digital information resources to the engineering colleges and research institutions. The Indian National Digital Library in Engineering Sciences and Technology (INDEST), popularly known as INDEST-AICTE Consortium, in association with the University Grants Commission (UGC) is entrusted with the task of meeting the information requirements of the research community. In the State

of Karnataka, there are 171 engineering colleges. Out of which, excluding industrial establishments, 65 colleges are recognized as research centres.

Collection of GL and its Use Pattern

Below table furnishes statistics of GL collection. As submission of dissertations is a part of master's degree programme and mandatory for the post-graduate students, the total holding of dissertations in the libraries is 79845. Many libraries have got a good collection of dissertations, proceedings of CSW and technical reports.

Table 1: Total collection of GL in the libraries

Sl.No.	Types of GL	Total Collection
1	Theses	793
2	Dissertations	79845
3	Institutional publications	9499
4	Trade literature	3021
5	Technical reports	22181
6	Proceedings of CSW	16456
	Total	131795

The trade literature collection is quite small. As the research programme has been initiated recently by VTU, there are just 793 theses volumes in the holdings of these libraries. Many of the theses volumes before 2003 were submitted to various universities of the state. Further, some of the libraries do not have complete collection of their own college. Engineering colleges have to make it mandatory to send one or more copies of their publications to their libraries so that comprehensive collection can be accessed in the libraries without any gaps. College publications include annual reports, budget reports, progress reports, calendar of events, development review reports, quality monitoring reports, details of facilities and services, college handbooks, guides, brochures and manuals. Acquisition policy, collection development policy in the engineering colleges has to be evolved with action plan to build-up GL collection. A survey of users has to be conducted on the use of GL to identify the area and specific documents required for various academic and research programmes.

It is clear from the below table that the GL in all the govt. College libraries is easily accessible without any difficulty. In the Aided college, 88.9% of the libraries have kept GL at vantage points facilitating easy access.

Table 2: GL kept at vantage points and easily accessible

Sl. No.	Extent of Easy Access	Govt. Colleges		Aided Colleges		Private Colleges		Total	
1	Most easily accessible (100%)	5	83.3%	3	33.3%	26	52.0%	34	52.3
2	Easily accessible (75%)	1	16.7%	5	55.6%	18	36.0%	24	36.92
3	Moderately easy to access (50%)	Nil	Nil	1	11.1%	5	10.0%	6	9.2
4	Difficult to access (25%)	Nil	Nil	Nil	Nil	1	2.0%	1	1.5
	Total	6	100	9	100	50	100	65	100

As regards private college libraries, 88% of the libraries facilitate easy access to the GL. Considering the 65 colleges recognized for research, a large majority of the libraries representing 89.2% have kept GL at vantage points so that the users can access easily

Table 3 : Extent of dependency of librarians on other libraries for GL

S. No.	Types of GL	Extent of Dependency					Total
		100%	75%	50%	25%	Nil	
1	Theses	5 7.7%	13 20.0%	16 24.6%	21 32.3%	10 15.4%	65 100%
2	Dissertations	3 4.6%	15 23.1%	18 27.7%	22 33.8%	7 10.8%	65 100%
3	Institutional publications	3 4.6%	13 20.0%	15 23.1%	23 35.4%	11 16.9%	65 100%
4	Trade literature	3 4.6%	11 16.9%	17 26.2%	19 29.2%	15 23.0%	65 100%
5	Technical reports	5 7.7%	7 10.8%	24 36.9%	22 33.8%	7 10.8%	65 100%
6	Proceedings of CSW	3 4.6%	12 18.5%	19 29.2%	23 35.4%	8 12.3%	65 100%

Table 3 shows that the dependency of librarians on regional libraries is to a lesser extent in the range of 25% to 50%. To a moderate extent of 50%, the librarians depend on other library collection especially for technical reports and the proceedings of CSW. Not much of dependency on other libraries can be noticed as far as institution publications and theses volumes are concerned. From this, it can be deduced that a large percentage of librarians depend on regional libraries to the lesser extent of 25% to 50%. The librarians need to be educated to make use of the resources and services of regional libraries too for meeting the needs of the users beyond expectation, and thereby creating the 'delight' among the library users. This has to be treated as the quality library services.

Table 4: User- wise frequency of access and use of GL

Sl. No.	Frequency	Category of Users					
		Faculty guides	Percentage	Research scholars	Percentage	Total	Percentage
1	Most frequently	20	5.9	67	7.2	87	6.8
2	Frequently	189	55.6	519	55.8	708	55.8
3	Moderately	98	28.8	279	30.0	377	29.7
4	Occasionally	31	9.1	64	6.9	95	7.5
5	Not at all	2	6	1	0.1	3	0.2
	Total	340	100	930	100	1270	100

A large segment of users, 209 faculty guides and 586 research scholars representing 61.5% and 63% respectively, access and use GL frequently or most frequently for academic and research needs. The negligible number of users, 2 faculty guides and 1 researcher have offered negative opinion. From among the entire population of users, it is clearly evident that 62.6% of them access GL quite often. Hence, it is true that the GL collection available in the holdings of the engineering college libraries is of great value for the faculty and research scholars.

Table 5: Response on the method of locating the GL in the libraries

Sl. No.	Means of Locating GL	Faculty Guides		Research scholars		Total	
		No.	%	No	%	No	%
1	Use of catalogues	128	37.6	331	35.6	459	36.1
2	Use of new arrival lists	97	28.5	250	26.9	347	27.3
3	Web notices/alerts	17	5.0	50	5.4	67	5.3
4	Browsing at the shelf	98	28.8	299	32.2	397	31.3
	Total	340	100	930	100	1270	100

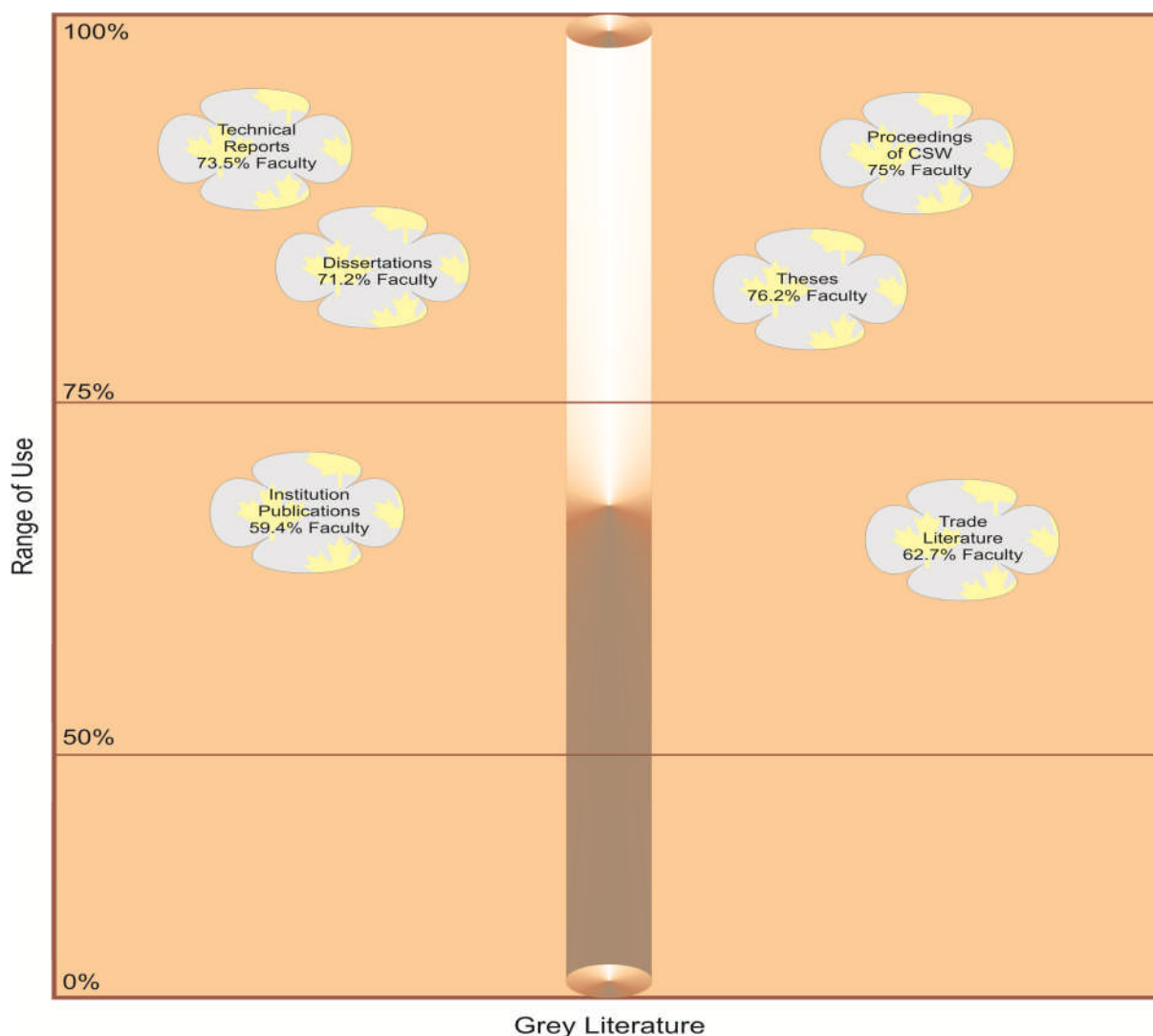
It is clear that 459 respondents representing 36.1% use the library catalogs. Further, it is also important to note that 347 respondents comprising 27.3% use new arrivals list compiled by the libraries. Another segment of respondents representing just 5.3% depends upon web alerts, web notices. It is worth observing here that 397 respondents representing 31.3% follow the method of browsing at the shelves. Among the patterns of locating grey literature, use of library catalog and browsing at the shelves are being followed to a greater extent.

It is evident that the large majority of the faculty guides have indicated that the technical reports, proceedings of CSW and dissertations are useful in the higher range of 50% to 75%. However, the doctoral theses, trade literature and institutional publications are useful in the lower range of 25% to 50%. From this it is clear that the entire collection of GL is moderately useful for faculty for teaching purpose.

The extent of the use of GL for teaching is low when compared to the use for research purpose. Invariably, scholars need current literature and up-to-date statistics for preparation of research articles for scholarly journals, research papers to be presented in the seminars and conferences, bringing out research monographs, delivering special lectures and keynote addresses, and preparation of project works and research reports/theses. All these constitute the task of research work, for which scholars rely upon library services on modern lines.

Chart 2 depicts that large majority of the faculty members have opined that GL comprising theses, dissertations, technical reports, and the proceedings of the CSW are useful in the highest range of 75% to 100%. However, trade literature and institutional publications are found useful in the higher range of 50% to 75%. From this it is clear that all type of GL collections form vital sources of information for faculty for research

Chart 2: Range of the use of GL by the majority of the faculty for research



The bar diagram below, clearly indicates that a large percentage of professors and associate professors rely upon GL for research. However, comparatively lower percentage (59.6%) of lecturers does depend on GL collections for research tasks. Professors possess long research experience when compared to lecturers.

Chart 3: Faculty-wise frequency of access to GL for research

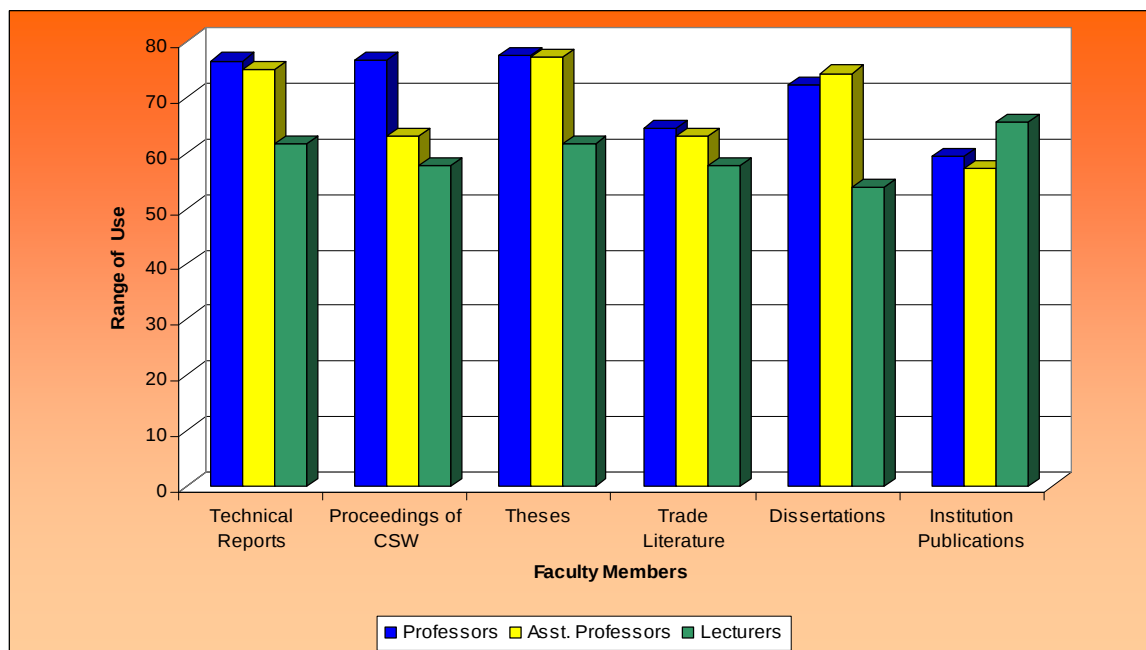
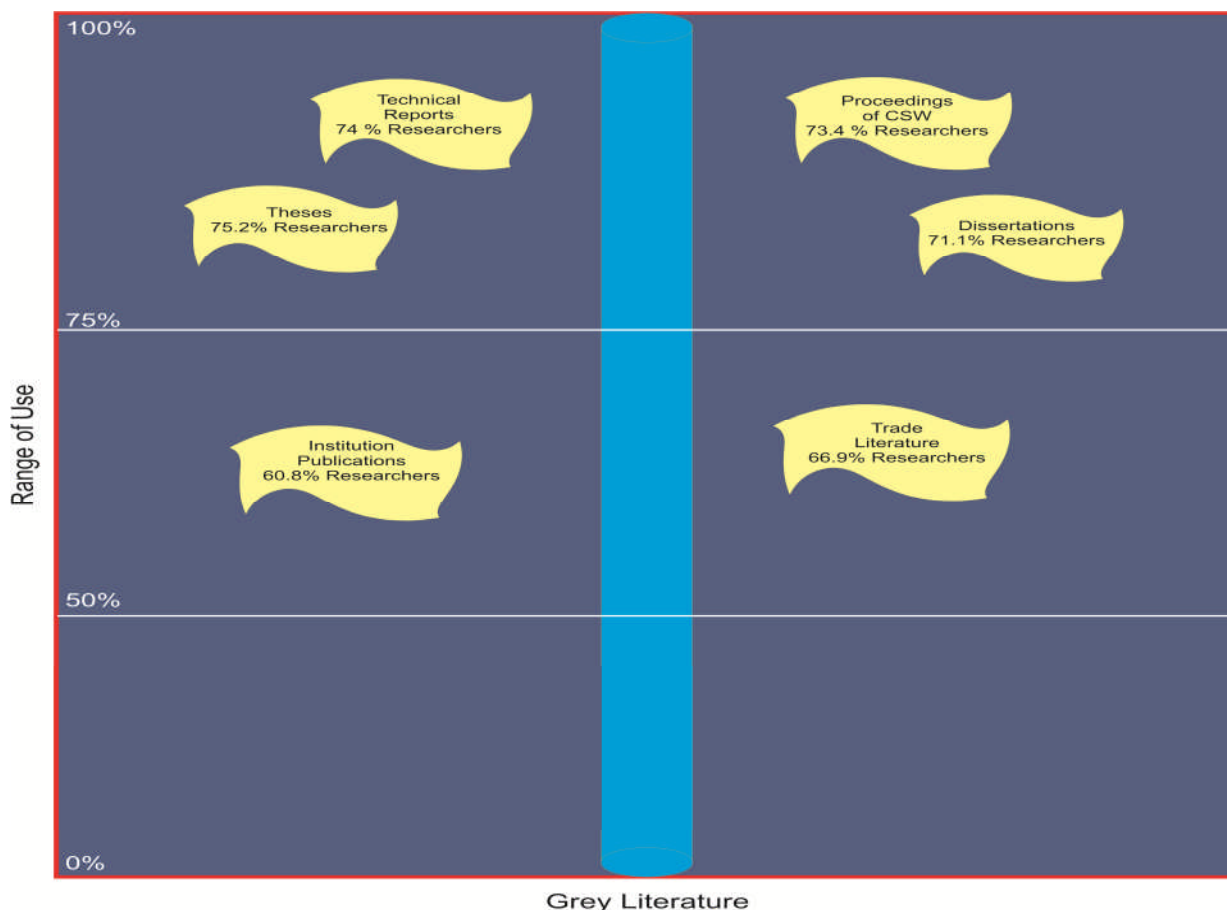


Chart 4: Range of the use of GL by the majority of the research scholars

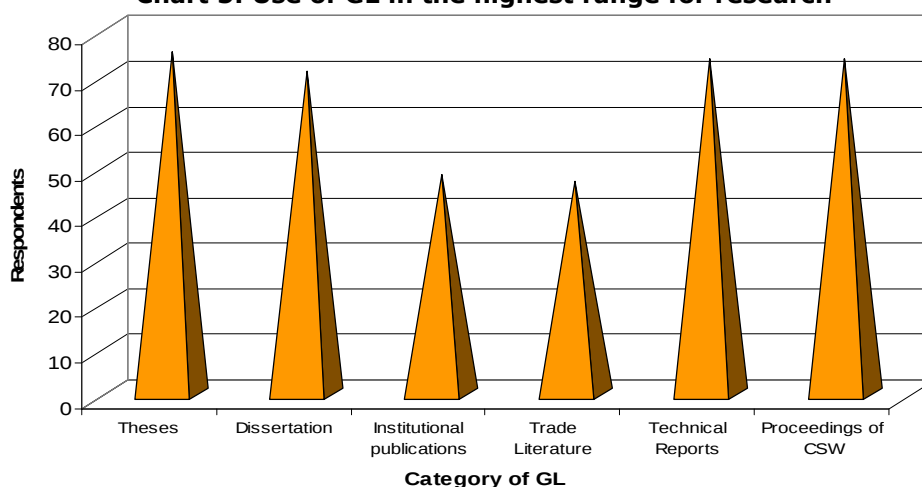


A large majority of the researchers rely upon theses, dissertations, technical reports and proceedings of CSW in the highest range of 75% to 100%. However, the use institutional publications and trade literature is noticed in the range of 50% to 75%. From this it is clear that the research scholars use GL collections of all types to a great extent for research and publications.

Table 6: Use of GL in the highest range for research and publication

S. No.	Category of GL	Use in the highest range of 75% to 100%		
		Faculty Guides	Research scholars	Total
01	Theses	259 76.2%	699 75.2%	958 75.4%
02	Dissertations	242 71.2%	661 71.1%	903 71.1%
03	Institutional publications	159 46.7%	456 49.1%	615 48.4%
04	Trade Literature	147 43.3%	449 48.3%	596 46.9%
05	Technical Reports	250 73.5%	688 74.0%	938 73.8%
06	Procedures of CSW	255 75.0%	683 73.4%	938 73.8%
	Average use in %	64.3%	65.2%	64.9%

Chart 5: Use of GL in the highest range for research



As regards the six types of GL, an overwhelming majority, representing 71% to 75% of the users (faculty and researchers) opine that the theses, dissertations, technical reports and the proceedings of CSW are useful in the highest range for research purposes. On the other hand, slightly less than half of the users, 46% to 48% feel that the institutional publications and trade literature are useful in the highest range. The MAGIC project undertaken by Paul A. Needham and others in the year 2002(p.7), pointed out that the engineers often rely upon, technical reports, for research purposes.

Table 7: Faculty guides on the method of keeping track of recently released GL

Sl. No.	Method of keeping track of GL	Designation wise faculty guides			
		Professors	Asst/Associate Professors	Lecturers	Total
1	Regularly attend CSW	158 64.8%	5 7.1%	19 73.1%	222 65%
2	Browse the web	64 26.2%	45 64.3%	7 26.9%	86 25.3%
3	Visit other/local libraries	16 6.6%	15 21.4%	Nil	21 6.2%
4	Don't keep track of GL	6 2.5%	5 7.1%	Nil	11 3.2%
	Total	244 100%	70 100%	26 100%	340 100%

Here, 64.8% of the professors and 73.1% of the lecturers keep track of the release of the proceedings of the conferences, seminars and workshops as they regularly attend such programmes. 64.3% of the assistant and associate professors browse the web for information on grey literature. Only a small percentage of faculty guides go to local libraries in search of grey literature acquired recently. 6.6% of professors and 21.4% of assistant professors have the habit of relying upon the local library collections. A large majority of faculty guides to the extent of 65% keep track of recently released conferences, seminars and workshop proceedings by regularly attending the programmes.

Table 8: Response on the weeding-out of outdated GL collection

Sl. No.	Response on weeding out of the old GL	Faculty guides and Research scholars			
		Government colleges	Aided colleges	Private colleges	Total
01	Yes, weed out	12 (41.4%)	105 (28.4%)	302 (34.7%)	419 (33.0%)
02	No, don't weed out	17 (58.6%)	266 (71.6%)	568 (65.3%)	85 (67.%)
	Total	29 (100%)	371 (100%)	870 (100%)	1270 (100%)

67% of the respondents opine that the old grey literature should not be weeded out from the libraries. They prefer to see that the old grey literature collection still maintained in the library for easy access and use. In the present study, 33% of the respondents argue in favour of regular weeding out process which facilitates easy access. It is important to note that research centres of engineering colleges need to maintain old collection of GL systematically organised for use.

Now-a-days, library cannot meet the needs of its users from its own collection. To meet various needs of users and inter-disciplinary approaches, libraries need to depend on the information sources of regional libraries in a network environment. The information resource sharing programmes have come up on account of this trend.

Table 9: Gender-wise response on knowledge of GL of regional libraries

Sl. No.	Knowledge of GL available in other libraries	Gender-wise response of users					
		Male Respondents		Female Respondents		Total	
		No.	%	No.	%	No.	%
01	Yes, I have the knowledge	455	47.3	101	32.8	566	43.8
02	No, I have no knowledge	507	52.7	207	67.2	714	56.2
	Total	962	100	308	100	1270	100

It is evident from the above table that 43.8% of the users are familiar with the GL collections of regional libraries. A major segment of respondents express that they have no knowledge of GL collection of regional libraries. This segment of the respondents account for 56.2%. While considering gender-wise familiarity, 67.2% of the ladies who are faculty guides and researchers have no knowledge about the GL collection of regional libraries. Only 32.8% of the ladies are familiar as they make use of regional libraries. However, 46.8% of the male respondents are familiar with the GL collection of regional libraries. From this it can be deduced that a large segment of female respondents have no knowledge of GL collection of regional libraries. They find it difficult to move out of their colleges and travel for long distance to locate and refer GL of regional libraries. Therefore, there is need to compile the union list of important GL available in local libraries, as well as, engineering college libraries. Further, the bibliographic details of GL available in these local and engineering college libraries may be made accessible on-line.

Training Needs Projected by the Users and Librarians

Table 10: Orientation / Training needs projected by the users

Sl. No.	Category of Response	Faculty Guides		Research Scholars		Total	
		No.	%	No.	%	No.	%
01	Strongly agree	159	46.8	345	37.1	504	42.0
02	Agree	158	46.5	499	53.7	657	50.1
03	Agree to a little extent	18	5.2	79	8.5	97	6.8
04	Disagree	5	1.5	7	0.8	12	1.1
1+2	Agree & strongly agree	317	93.2	844	90.7	1161	91.4

Training has become essential for academic growth. The necessity of training is noticed for updating professional skills. This is especially more so in case of the staff working in the field of Engineering Sciences and Technology. Laloo (2002, pp. 140-148) describes in his work on "Information needs, information seeking behaviour and users" various methods of user education, especially the teacher users. The methods and steps explained here are

useful. Considering the responses of both the categories of users, an overwhelming majority of the respondents representing 91.4% argue in favour of conducting orientation/training programmes for better access and use of GL collection. However, only 12 respondents representing just 1.1% hold negative view; such a kind of orientation or training is not necessary for them.

Table 11: Training requirement projected by the librarians

S. No.	Response on Training Requirement	Government Colleges	Aided Colleges	Private Colleges	Total
01	Positive response	5 8.33%	9 100%	43 89.2%	57 87.7%
02	Negative response	1 16.7%	Nil	7 10.8%	8 12.3%
	Total	6 100%	9 100%	50 100%	65 100%

The highlighting fact is that 57 librarians representing 87.7% express positive response stating that they need to attend training / orientation programmes in order to up-date themselves with latest trends and developments. The study conducted by Paul A.S. Needham, et.al.(2002, pp113-116), in the MAGIC Project Report submitted in the year 2002, furnishes conduct of seminar for working librarians. Such a seminar was organized at the British Library, London for the participants on managing effective access to GL collection (technical reports) available in the regional libraries.

Table 12: Extent of training needed by the librarians

S. No.	Extent of training requirement	Government Colleges	Aided Colleges	Private Colleges	Total
01	Higher extent	4 80.0%	7 77.8%	30 69.8%	41 71.9%
02	Moderate extent	1 20.0%	2 22.2%	11 25.6%	14 24.6%
03	Slight extent	Nil	Nil	2 4.6%	2 3.5%
	Total	5 100%	9 100%	43 100%	57 100%

Large segment of library staff representing 71.9% feels like undergoing intensive training in order to develop and handle GL collection on modern lines. Here, it is recommended to organize orientation programme or workshop by the Professional Associations for 3 to 4 days covering the themes of;

- Organization and building of GL collection
- Rendering information services using GL collection.
- Resource sharing in the network environment
- Creation of digital repositories

The workshop may also cover extension programmes such as display of important and current GL in engineering sciences, and invited talks by the resource persons.

Conclusions

The faculty and researchers who are actively engaged in research have felt the importance of GL. Having noticed the value of GL mainly for research, a large majority of them is found accessing and using GL collections existing in the holdings of the engineering college libraries in the higher range of 50% to 75%. The working librarians in the recognised research centres have been experiencing increased demand for GL.

The holdings of GL lack up-to-date collection in 43.7% of the libraries. However, it is encouraging noting that the majority of the libraries have systematically organised their GL collections with classification and cataloguing schemes. On account of this, the collections in most of the libraries are easy to access and use. The institutional publications and trade literature are hereby recommended to maintain in coloured box files and arranged in the chronological order so that, identification and access becomes easy for the users on account of the uniformity and consistency in colour coding.

The librarians, faculty members and the library committee have to come together for developing strong need based GL collection in every library. Irrespective of the cadre, every faculty and researcher has to be encouraged to recommend GL for procurement which they consider as vital for research. In this way, the collection can be strengthened in every engineer discipline. Educate the faculty and researches through orientation so as to identify, recommend and uninterruptedly access GL collections. Secondly, orientation is

expected to develop knowledge and skills among working librarians for tracking, procuring, organising and facilitating better access to GL collections in the networked environment.

What is most important is augmenting the programme of sharing the resource of GL in the networked environment. The GL holdings of engineering college libraries and the technical libraries of the region have to be freely accessed and shared for mutual and reciprocal benefits. For the purpose of bringing the collection of GL together, there is need for developing the database of the holdings and facilitating on-line access. This venture in fact has to be encouraged and supported by all the concerned as this programme has to be developed and nurtured on co-operative basis, settling the issue of copyright.

While considering the GL by the category, VTU must insist research scholars to submit their doctoral theses and dissertations in soft copy so that, full-text of the digital version can be made accessible on LAN / web site. The Vidyandhi Project of Digital Theses which has already digitized a part of the theses available in the holdings of university libraries in India may also consider taking up the theses available at VTU. Further, the proceedings of the conferences and seminars form valuable sources, projecting vast amount of data, including the trends in the field, useful for scholars. Creation of an open repository by the VTU will be of immense help as the large segment of researchers has inclination to refer to these proceedings, time and again. The materials for digitization may be decided upon considering the below indicated alternatives as well as, on the feed-back of the user community.

- Digitise the entire collection of the proceedings.
- Digitise only the recent ones of 3 to 5 years
- Digitise only the active collection/those that are in demand.
- Digitise, considering the emerging new disciplines/thrust areas of research

The faculty and researchers to a considerable extent are found relying upon the local libraries, where the GL collections are comprehensive and up-to-date. However, it is highlighting that a large segment of female users though they have felt-need for grey literature, are ignorant of the collection of regional libraries on one hand, and face practical difficulties to freely move out of their colleges and travel a long distance and get into the environment of other libraries. Hence, there is need for creating on-line database in order to show the availability of various GL collections of engineering college libraries. Further, the libraries have to take initiative for getting the required GL on inter-library co-operation. It is also a good practice if individual libraries host new additions of GL on the web sites/blogs. Of late, open digital repositories facilitating on-line access is desired. The VTU has to venture in this direction to augment quality research and output of publications.

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Grey Literature Past and Present: The Evolution of Library Annual Reports*

Susan E. Searing (United States)

Introduction

Librarianship was professionalized in the late nineteenth century, when university-level programs of study were established to train librarians in the United States. As the field of library management developed, the annual report became a vehicle for communicating the library's mission and accomplishments to its stakeholders, including funders (both private and governmental) and the general public. Writing and reading annual reports also allowed librarians to share professional knowledge and to benefit from each others' experience. Today, library historians and local history researchers can discover in rich veins of source material in annual report series that may date back a hundred years or more.

Many American libraries still produce reports every year. Today's reports are different in form and content from their ancestors and are just one means among many that librarians now use to communicate with library users, donors, and government officials. Nonetheless, this genre of grey literature is worthy of collection and preservation.

Annual reports as a grey genre

The annual report is a genre rooted in the world of commerce:

A printed publication, usually less than 100 pages in length, submitted each year by the officers of a publicly held company to its board of directors (or other governing body) and issued in softcover for distribution to current and prospective shareholders, describing the firm's activities during the preceding fiscal year and its current financial position. ... Some nonprofit organizations also publish annual reports. (Reitz)

In the United States, state laws usually require governmental agencies such as libraries to submit annual reports. Beginning in the second half of the 19th century, legislation that authorized the establishment of tax-supported public libraries often mandated annual reports as an accountability measure, to assure taxpayers and government officials that their money was being spent well (Cannon 1923). Today, American librarians still compile reports to meet legal requirements imposed by local, state, or national governments.

Early library annual reports served an important additional purpose. In the fledgling days of the profession, before the emergence of widely-read professional journals, American librarians exchanged annual reports in order to learn about innovative facilities and programs. Extensive statistical data was compiled and used to benchmark a library's performance compared to libraries in similar communities and to justify requests for increased funding (Lear 2006). Library annual reports played a similar role in the dissemination of professional knowledge in Great Britain (Peatling and Baggs 2004; Peatling and Baggs 2005).

Despite the importance of annual reports in the development of public librarianship, many librarians dreaded the yearly exercise of writing them. In 1896, Caroline Harwood Garland, a public librarian in Dover, New Hampshire, wrote, "It is usually with a profound sigh that the librarian sits down to write his annual report" (Garland 1896). Librarians were reluctant to take time away from more pressing work to compose a report that, they suspected, few people would actually read (Munn 1923; Rosser 1930; Danton 1949). Modern librarians still question the utility of annual reports, yet they continue to produce them and strive to make them informative and engaging.

Today it is generally believed that improving public relations is the primary purpose of library annual reports (Brown 2003). However, an examination of twenty-five recent English-language books about library public relations, communication, and marketing found that three-quarters of them did not mention annual reports at all.¹ Of the six that did, only one devoted more than a single page to the topic (Hartzell 2003). Have annual reports become such a routine component of library management that lengthy discussions in the professional literature are not needed? Or have such reports diminished in importance? Today's librarians have multiple media at their disposal to share information with the public, and professional journals, email groups, conferences and online

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communities facilitate networking to share ideas within the profession. Nonetheless, the library annual report persists as a unique sub-genre of grey literature.

Review of the literature

Although public libraries have been producing annual reports for more than a century, and there has been a fair amount of writing *about* them over the years, little substantive research exists. The available literature is of several types. The largest portion consists of short pieces with tips for producing high-quality, attention-getting reports. These sources offer advice on content, organization, design and distribution. However, the last complete, detailed instructions for report preparation appeared more than two decades ago (Bradley and Bradley 1988).

Back in the 19th century, annual reports were so important to the training of future librarians that schools, like the Library School at the University of Illinois, collected and preserved them (Curtis 1912). Library science students in the 1890s were assigned to analyze library annual reports as part of their curriculum (Carman 1895; Warwick 1896). Annual reports were so highly valued as sources of information about library development that the American Library Association (ALA) in 1913 published an index that covered the reports of 170 library commissions, state libraries, university libraries and public libraries in the United States and Canada (Moody 1913).

Both British and American library historians have written convincingly about the value of older annual reports as historical evidence (Peatling and Baggs 2004; Peatling and Baggs 2005; Lear 2006). However, these remarkably rich sources of information remain under-utilized by historians, perhaps because they have been difficult to obtain and tedious to examine. As more and more older documents are digitized, this will hopefully change.

Until the 1980s, professional magazines often carried notices and reviews of exemplary annual reports, especially ones that were creatively designed. For example, *Library Journal*, a long-running magazine for American librarians, drew attention in the late 20th century to reports that mimicked a recipe card, a federal income tax form, and a restaurant menu ("An annual report worth cribbing" 1985; "A taxing recipe" 1989).

A small number of studies have gone beyond mere description and compared reports, usually in order to derive a set of best practices for content and format. In 1934, Ridley and Miles rated library annual reports from nineteen American cities. Their criteria included promptness, visual appeal, readability, length, cost, and breadth of distribution, as well as elements of content, such as diagrams, pictures, the balance of topics, and evidence of "social significance," i.e. impact upon the community (Ridley and Miles 1934). The most comprehensive comparative study was conducted in the mid-twentieth century by Madeline S. Riffey, a librarian at the University of Illinois. She examined fifty current annual reports from American public libraries, choosing a sample that "represent[ed] attractive and readable reports from libraries of various sizes and regions of the country" (Riffey 1952, p.1). Riffey conducted a detailed analysis of the reports, assessing them on numerous dimensions of organization, content, format, and distribution. Riffey's carefully chosen sample forms the basis for my own study, which looks at digital representations of 21st-century reports from the same set of libraries.

Identifying a sample

There are over nine thousand public libraries in the United States (American Library Association). To identify a representative sample, I relied on Riffey's earlier work. I visited the websites of the fifty libraries in her 1952 study and searched for their annual reports. (All of the libraries are still in existence, although some have changed names or merged.) I was able to discover digital versions of current annual reports for only eighteen (36%). "Current" in most cases is 2009 or 2008. Typically the annual report is linked directly from the "About Us" section of the library website. In two cases, there were no visible links to the report, but I was able to find it by using the site's search engine. All but one of the reports are PDF documents; a few are also available as interactive web files.

What can annual reports tell us?

Statistical information

Today's annual reports present statistical data very selectively. The report writers choose numbers that will impress the average reader, such as the total number of books borrowed during the year or the number of people who accessed the internet on library computers. Historically, librarians counted many more things, and statistics were a constant topic of discussion among early librarians. In 1902, the journal *Public Libraries* published a model form for annual statistical reporting. It was four pages long. Among other data, it required librarians to track the number of books added to their collections in 23 categories, including broad subject classes such as "religion" and "useful arts," document types such as

government publications, and books in the languages of major immigrant groups, such as German, Norwegian, and Bohemian ("Official reports for libraries" 1902).

The following year, a paper presented at the 1903 conference of the American Library Association outlined a staggering total of 131 questions to be answered in an annual report, most of them statistical in nature (Foster 1903). Repeated proposals were made in both Great Britain and the United States to standardize library statistics. The American Library Association issued a succession of guidelines, and for years many library annual reports stated explicitly that their statistics followed the format recommended by ALA. However, the ALA guidelines were not adopted universally.

Today, the federal Institute for Museum and Library Services (IMLS) collects statistics from over 9,000 public libraries. The data covers facilities, staff, revenue, expenditures, collections, and services, and the IMLS website displays a handy tool for generating comparisons between libraries (IMLS library statistics). The Public Library Association, a division of the ALA, also collects statistics from a representative sample of 800 libraries and publishes an annual compilation which complements the IMLS data. (Public Library Association 1991-). Consisting solely of numerical data, these national-level reports lack the rich narratives of local annual reports but do facilitate comparisons and benchmarking. One component of older annual reports that is rarely seen nowadays is a statistical breakdown of the items library users checked out. The most concise reports simply presented the numbers or percentages of fiction books versus non-fiction books that were borrowed during the year. But in other reports, the totals, especially for non-fiction, were further divided by subject, such as history or science, or genre, such as biography. Thus library annual reports depict the changing reading habits of American citizens over time and may reveal local and regional differences in literary taste.

With the software available today, it is a simple matter to record statistics and generate eye-catching, informative graphics. But even before the computer era, some librarians tried to lend their statistical reports some visual impact. The reports of the Salt Lake County, Utah, Public Library, for instance, although inexpensively mimeographed on low-quality paper in the 1940s and 1950s, made frequent use of illustrations and photographs to liven up the quantitative data. A more recent approach to making the numbers interesting involves calculating the value that public library services would have on the open market – the cost of purchasing a book, attending a cultural program, renting meeting space, and so on – to demonstrate a high return on a small investment of tax dollars.

Narrative information

Some library annual reports provide only the most concise, factual narratives, while others are long and opinionated. From a historian's viewpoint, the verbose reports are the best. Bernadette Lear writes, "It is exhilarating to read about the rise of open shelves; business, technical, and other special collections; young adult services; bookmobiles; and other advances...One can often glean important dates, staffing changes, milestones, city ordinances, a sense of how the library operated..." (Lear 2006, p.467) . Whereas statistics recorded how many books were borrowed, the textual portion of a report might bemoan the fact that borrowers prefer light fiction to more serious books, or might speculate on why books on certain subjects were suddenly popular. Library annual reports also reflect broader trends in American history. For example, in our present economic downturn, it lifts one's spirit to read how public libraries coped with budget cuts and survived during the Great Depression of the 1930s.

Testimonials from members of the community rarely appeared in older reports, but they are a very common feature today. Photographs of happy library users are accompanied by their own words recounting the positive impact the library has had on them and their families. Today's reports often include long lists of individual and corporate donors. Such lists were not unknown in earlier years, but they were not so common. Because public libraries, although still supported by taxes, increasingly rely on donations and grants, the annual report has evolved into an important tool for fundraising. For this reason, perhaps, the names, quotations, and images of library users are prominent in today's library annual reports.

Staff activities, on the other hand, have largely disappeared from annual reports. Members of the public are simply not interested in the staff's professional development activities or individual accomplishments. Older reports often identified every staff member by name, even janitors and part-time employees, but today's reports typically list only directors and top-level administrators. Volunteers are more likely to be recognized by name than are front-line staff members, especially in reports from large multi-branch systems like the New York Public Library or the Denver Public Library. Members of boards of trustees are *always* listed.

In general, library annual reports have always focused more on the past year than on the future, but goals and plans are sometimes discussed. Today, some reports enumerate strategic goals, and many reprint the library's mission statement. Despite widespread budget cuts and staff reductions, public library reports for 2008 and 2009 are relentlessly upbeat in emphasizing the library's success. In some older reports, by contrast, the librarians honestly acknowledge disappointments and areas needing improvement. For example, Milton Ferguson, director of the Brooklyn Public Library in the 1940s, wrote eloquently year after year about the desperate need for salary increases and shorter work hours for librarians.

Visual information

Today's annual reports are treasure houses of visual information. Nearly all of them feature full-color photographs of people using the library – choosing books from the shelf, peering at computer screens, listening raptly to storytellers. Racial, ethnic, gender and age diversity are evident in the photographs, signaling that the library is a resource for everyone in the community.

Library buildings are also depicted, especially new or renovated ones. Whereas casual photos of users were less common in the past, photos and drawings of buildings have been a staple of library annual reports for more than a century, making them a source of information for architectural historians. Occasionally, library reports even contain original floor plans.

Snapshots of interiors reveal the library furnishings of earlier eras. Some photos show new service locations in a pristine state, but others depict the active life of the library as readers interact with staff and use the collections. When a library acquired new equipment, such as a microfilm reader or audiotope player, a photograph of it was often inserted in the next annual report. Less frequently, photographs depict services offered outside the walls of the library, such as book delivery to hospitals or storytelling in outdoor parks.

Library annual reports also contain images of the people who work in and use public libraries. Photographs of staff appear with some regularity in older reports, often working behind the scenes in cataloging or binding departments. In 1947, the Buffalo (New York) Public Library used its annual report both to celebrate its fiftieth anniversary and to make the case for better facilities. "What is the Buffalo Public Library?" the report asked.

The Buffalo Public Library is not the drab and crowded buildings with their dark, congested book stacks. Nor is it the books alone, for books unread are no books at all. No, the Buffalo Public Library is the people. It's the people who use the Library, you and I and our children, over 2,000 of us a day, every day. It's also the people who make the Library tick. It is the men and women—professional librarians, clerks, bookbinders, and maintenance men—who make up the small but smoothly functioning team we call the Library Staff (Galt and Foster 1948, p.8-9).

Pictures of the staff at work in cramped spaces were eloquent visual arguments for a new building. Today, by contrast, when staff members are pictured, they are nearly always shown interacting with users in public spaces. Usually, however, library users are depicted utilizing the library without any assistance.

When it comes to graphic design, library annual reports continue to mine ideas from advertising and other media. For example, the latest report from the Salt Lake County, Utah, Library is formatted like a fotonovela, while other libraries use color, multiple fonts, and creative layouts to generate excitement on the page.

Future research

The present research is just the beginning of understanding library annual reports as a genre of grey literature that carries information not readily found in books or in librarians' professional journals. Restricted to a population of libraries selected in 1952, the present study is necessarily limited in scope. Riffey's original set of criteria for comparing reports needs to be updated to note the presence of content such as URLs, mission statements, and return-on-investment analyses. A rubric for evaluating visual information should also be developed and applied.

From Riffey's original group of fifty, only 18 libraries have mounted current annual reports on their websites. Therefore, a future direction for this research project will involve contacting librarians at those libraries from the original sample who do not make their reports available on the web, in order to learn whether they still produce annual reports and, if so, how their reports are distributed.

Further, given the clear indication from contents and design that today's library annual report is intended as a marketing and fundraising tool, it could be enlightening to interview librarians who prepare annual reports, in order to discover what audiences they have in mind and what outcomes they perceive from their efforts.

Academic libraries in the United States, in particular those at large universities, also issue annual reports. The available research on academic library annual reports is very limited (Swanepoel and Smit 2003; Sauer 2006). A future phase of my research will identify a sample of annual reports from academic libraries for evaluation and comparison.

Implications for collecting library annual reports

I do not doubt that there are many more questions that one could ask about this body of grey literature, and the answers would reveal overlooked aspects of library management, library outreach, the library's idealized self-image, and the role and position of the library vis-à-vis its community of users and supporters. And a larger question remains as well: how and where will such reports be preserved for future scholars and librarians to study and enjoy? The University of Illinois Library ceased systematically collecting such reports in the 1970s. Some continue to arrive as gifts, but circulation statistics and informal observation suggest strongly that current library annual reports are not used by today's students and researchers. In the past, a student preparing for a job interview at a public library might seek out and read its annual report; today that student will explore the library's website instead. Thus, under increasing pressure to reduce the labor-intensive processing of gift materials, reports that have a web presence are no longer cataloged and retained in print at my university. Can we count on the originating libraries to retain archival copies? Will historic annual reports be digitized as part of mass digitization efforts? Alas, although the University of Illinois is a partner in the Google Books project and the Open Content Alliance, many of the historic annual reports are in fragile condition or too tightly bound to be scanned.

The University of Wales Aberystwyth has preserved a large collection of British public library annual reports from the period between 1850 and 1919, and created a bibliographic database of the collection (Peatling and Baggs 2000). No such project has been undertaken in the U.S. Nor is there, to my knowledge, any systematic effort underway to capture and preserve the current output of annual reports. Neither DLIST, the US-based digital repository for library and information science, nor E-LIS, its more successful European counterpart, have made an effort to incorporate annual reports, though I believe they would not be unwelcome.

The question of preservation becomes more complicated as libraries adopt new media for their reporting. Consider the 2009 report of the Topeka and Shawnee County (Kansas) Public Library, which is in the form of a multimedia website. Incorporating audio and video content and page-turning technology, as well as multiple static web pages, it is a lively portrait of a library energetically engaged with its community. What access will future historians have to this document? Because this same question is being asked about digital grey literature in other areas, I am hopeful that a solution will be found that will enable today's library annual reports to be as useful to future historians as the old ones are to us today.

Notes

* I examined twenty-five English-language books in the University of Illinois collection, published since 2000 and bearing the subject headings "Libraries—Public relations," "Libraries—Marketing," or "Communication in library science."

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National Technical Library

National Technical Library (hereafter referred to as “NTK”) is a central professional library open to public, which offers a unique collection of 250 thousand publications freely accessible in open circulation. Its holdings form the largest collection of Czech and foreign documents from technology and applied natural sciences as well as associated social sciences. It contains a total of 1,2 Mil. volumes of books, journals and newspapers, theses, reports, standards, and trade literature in both printed and electronic forms. Besides its own collection, parts of Central Library of the CTU in Prague and Central Library of the ICT holdings are accessible in NTK.

For detailed information on the National Technical Library visit <http://www.techlib.cz/en/>

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As corresponds to its statutes, NTK manages – among others – the project of building the **National Repository of Grey Literature**.

The project aims at gathering metadata and possibly full texts of grey documents in the fields of education, science and research.

The NTK supports an education in the field of grey literature through annual seminars in the Czech Republic.

For more information on the National Repository of Grey Literature visit our project Web site <http://nrgl.techlib.cz/> and for a search <http://www.nusl.cz/>

NTK Univers

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ISO Standards for Quality Education and Training for Facilitating Access to Grey Literature*

C.P. Ramasesh and N. Chowdappa (India)

Abstract

To increase the level of the user satisfaction and to continually improve upon the performance of service in libraries, imparting education training and is found a prerequisite condition for librarians who are involved in visualizing, acquiring, organizing and facilitating access to GL collection. Paper mainly focuses on the issues concerned with the performance of the professionals and the modus operandi of training at the Centre for Information Science and Technology (CIST), University of Mysore, under ISO 9001 standards of quality monitoring system. Paper highlights the eight principles of quality management system and describes issues concerned with quality audit and corrective measures and preventive measures to overcome defective procedures. Paper also depicts improvement in quality performance at the library of the CIST based on the feed-back of students during the years 2005 to 2009. Attempt is also made to highlight the aspects related with the proof of quality education.

Keywords: ISO Standards, Library services; Grey literature, User education; Grey literature, Orientation programme; QMS, Grey literature; Grey literature, Customer delight.

Standards are primary source of information which gives specification for uniformity and consistency in practice and production. Standards are evolved by national / international bodies. The International Organization for Standardization (ISO) is a world-wide federation established in Geneva. It has the responsibility of evolving standards depending upon the need across the world. Specifically speaking, the ISO 9001 is a generic Standard for building, operating and documenting quality management system. The mission of ISO is to provide international standardization to facilitate worldwide exchange of goods and services.

In India, the Ministry of Human Resources Development (Education) has been allocated Rs.445 billion for the plan outlay. This in fact is a real big boost. On account of this several reforms have been brought.

1. Encourage 'Quality Research'
2. Encourage 'Brain Gain Policy'
3. 'Quality Assessment' and 'Accreditation' has become mandatory
4. Conduct of 'Teacher Capacity Building' programmes.
5. Conduct of 'Employable Skill Development' programmes.

While coming to the realm of education and training for library and information services, it has become more and more technology oriented due to the application of information and communication technology. There is really a special emphasis for hands-on experience and learning skills. This in fact necessitates the appropriate orientation, as well as, quality education and training. One of the means of achieving the quality and excellence in education and training is to go for ISO certification. To be specific, the needs for ISO are;

- Day-by-day the needs of students are becoming more and more stringent
- To continually improve the quality of training and education, including the curriculum and the lesson plan
- Uniformity is insisted for global marketing of products and services
- Provide confidence to top management regarding quality being achieved and sustained.
- Provide confidence to the customers (students) that the intended quality is being delivered in education and training programmes.
- To reduce the cost of operation and waste to the maximum extent for the benefit of students/trainees.
- To get international recognition as top class / world class organization as far as quality education is concerned. Above all, it adds in gaining public opinion.
- To meet the needs of students/trainees constantly beyond expectations through periodical evaluation. Above all helps to achieve the 'Customer Delight'.

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PRINCIPLES OF Q.M.S : The quality management system (QMS) necessitates the need for application of certain principles. There are a set of eight principles which need to be adopted for achieving quality in performance. They are:

1. Student focused organization
2. Development of leadership qualities
3. Involvement of people
4. Process approach
5. Systems approach
6. Continual improvement
7. Factual approach to decision making
8. Mutually beneficial supplier relationship (relationship with service providers).

IMPLEMENTATION OF ISO STANDARD: Noticing the need and importance of quality in education, the management has to decide the steps to be taken for preparation. There are several issues which are to be considered at the preparatory stage.

1. **Defining the quality policy** - The organization has to define its policy in broader terms. It is on this statement all functions and activities will be evolved or determined. Policy statement will be usually idealistic yet achievable. Everyone in the organization should have commitment to the policy stated by the organisation.
2. **Stating the objectives** - The organization has to state all its objectives in the light of the above stated policy statement. As far as possible, the objective will have to be quantifiable or measurable. Measurable objectives help the organization to demonstrate continual improvement.
3. **Preparation of quality manual** - The manual giving the details of the organization, its functions and activities, responsibilities of the staff, the curriculum and the relevant divisions has to be prepared.
4. **Preparation of procedure manual** - The procedure manual states the lesson plans, the instructions for theory classes and practical sessions, including the tests, assignments, project work / field work and so forth, indicating the number of hours per topic to be covered. Accordingly, the entire programme has to be executed. All necessary instructions for conduct of theory and practical sessions will have to be indicated in the procedure manual. The procedure for the management of library services, duties and responsibilities of each staff, the list of quality records to be maintained by every staff will also be stated.
5. **Curriculum design** - In the educational institutions, the design of the curriculum plays a major role. It is the main indication of the quality / excellence. The curriculum needs to be improved every year noticing the trends and developments on one hand and the ways and means of facilitating access to grey resources on the other. The procedure also include the search strategies and on-line information resources available. The design indicates number of hours of theory classes, practical sessions, tests, project work, field work etc.
6. **Feedback** - For effective implementation of the education and training programme, feedback from students/trainees as to the clarity, expression, subject coverage, interaction, knowledge in the subject and effectiveness of teaching of each staff need to be collected. The data be tabulated and interpreted for demonstration of improvements in the system.
7. **Training matrix** - Training is an important ingredient and therefore periodical training needs to be conducted for staff to keep them abreast of recent trends and also to develop skills in handling IT based curriculum. The ISO version released in the year 2008 gives emphasis for training. Every year a training matrix be prepared seeking the area of training needed by every staff member and the training has to be conducted well in time to ensure what they teach and train in the class and lab is up-to-date. This way there is sufficient room to increase the competency of the personnel.
8. **Continual improvement** - ISO recommends the Kaisen Approach - the continual improvement. Every individual in the organization has a significant role to play, cooperate and contribute to the improvement in the performance of the system. The improvement / performance according to ISO be quantified and the organization should demonstrate continual improvement or step by step improvement.

Each staff in the organisation has his/her own assigned duties and responsibilities. He/she had to concentrate for creativity, cooperate for support, contribute for performance. Work of every staff member is significant and his/her contribution through his own creativity is expected and appreciated. It is on this basis that the organization will demonstrate its improvement, sustenance and quality in service. To achieve the quality at every step, the activities are to be planned and checked for expected results and further improvement.

This is popularly called as PDCA method (Plan-Do-Check-Act). The plans that are going to be implemented should have certain characteristics like:

- To be implemented in short time
- With least effort, and
- With minimum resources

CUSTOMER DELIGHT : The concept of improvement in performance has gained momentum on account of the Japanese technique of: "Kaizen Approach", which aims at day-to-day improvement in the organization. Whatever may be the situation today; there should be commitment, cooperation, and contribution from every staff for improvement of the system. Team work and leadership both are required and emphasized here for sustenance of quality education. By quality they mean the totality of characteristics and features of service that bears its ability to satisfy the stated or implied needs of the customers. Achieving customer delight means serving the customer beyond his expectations Here, all those activities of the organization which intend to gain appreciation of its customers beyond their expectations is the aspect of 'delight'.

Quality Education and Training at CIST: Centre for Information Science and Technology (CIST) is a self sustaining educational institution offering five major information technology courses at post-graduate level.

- Multimedia Production
- Software Development
- E-commerce
- Bio-informatics and
- Geographic Information System

CIST has been rendering educational services under the administrative jurisdiction of the University of Mysore. Of late, to maintain quality performance, the Centre is relying upon the quality manual and feedback of the customers.

To project the performance of CIST during 2005 and 2009, the feedback analysis reports were taken as the source material for the projecting quality performance. The CIST has been conducting user education or orientation programmes for students and librarians on the following aspects.

- Library facilities and services
- Access to information sources
- Participation in collection development
- Use of regional library facilities and services
- Library extension programmes
- Digital library systems

CIST library has a collection of 6130 sources, out of which project works, manuals, and courseware and report literature form 48.4% of the collection of the library. The students from all the five courses are also trained to make use of the facilities and services of the University Library where the collection exceeds 6,08,400 information resources. Out of the entire collection of the University Library, GL collection constitutes 11.9%. The GL collection mainly comprises of technical reports, theses and dissertations, trade literature, proceedings of the conferences, seminars and workshops and the university publications.

GL Collection at the University and CIST

Sl. No.	CATEGORY OF GL	Total GL Collection at the	
		University Library	CIST Library
1	Project works, Theses and Dissertations	58%	58%
2	Institutional Publications	15%	23%
3	Technical Reports	21%	12%
4	Proceedings of CSW	6%	7%
	TOTAL GL COLLECTION	72400 (11.9%)	2965 (48.4%)

As regards user training / orientation, the CIST librarians as per the guidelines indicated in the quality manual, conduct classes for a period of 3-4 days and obtain feedback from the students. On the other hand, the LIS faculty members handle training classes for librarians for a period of one week. The responses were obtained every year from 190 - 275 students who were studying in CIST.

FEED BACK FROM STUDENTS (QUESTIONNAIRE)

Name Course Year

E = Excellent (81-100%), G = Good (61-80%), S = Satisfactory (41-60%), N = Need to Improve (up to 40%)

01	Teaching Performance	☐
02	Teaching Methodology	☐
03	Library Resources and Services	☐
04	IT Infrastructure Facilities	☐
05	Extension Programmes	☐
06	Counseling and Security	☐
07	Performance of Individual Faculty	
Name	Paper	☐

Based on the feedback rating, the below table depicts the improvement in the performance in library services, starting from 2005 to 2009. The feedback rating was obtained as to the performance the library on the three aspects.

- Rating on organization and browsing facility.
- Rating on the information sources available in the library.
- Performance of library staff in rendering information services.

Continual improvement in library resources and services

S.L	RATING ON THE CRITERIA	2005	2006	2007	2008	2009
1	Information Resources/GL Available in the Library	65%	66%	66%	68%	70%
2	Organisation of GL/sources and Browsing Facility	62%	65%	67%	67%	68%
3	Performance of the Library Staff in rendering Service	62%	62%	64%	66%	69%

The statistics in the table shows the continual improvement in the performance over the past five years. The ratings given by the students as excellent performance above 80%; and good performance above 60% are considered here.

CONTINUAL IMPROVEMENT IN LIS (E & G RATINGS)

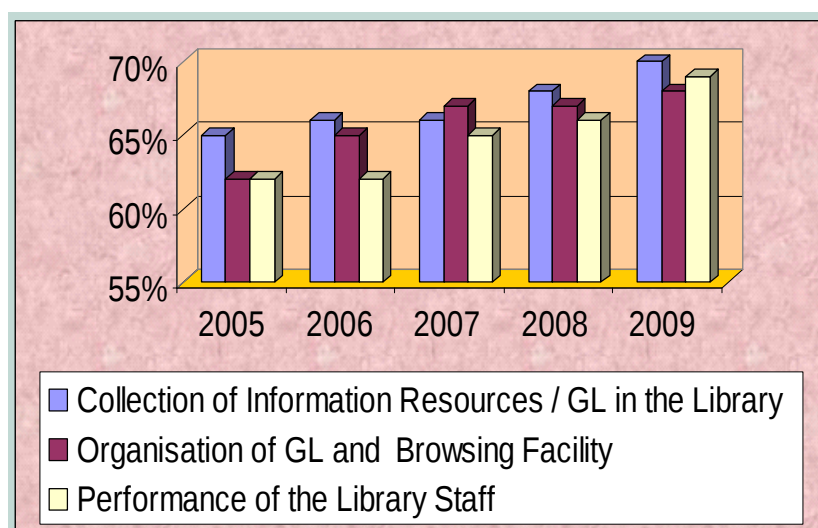
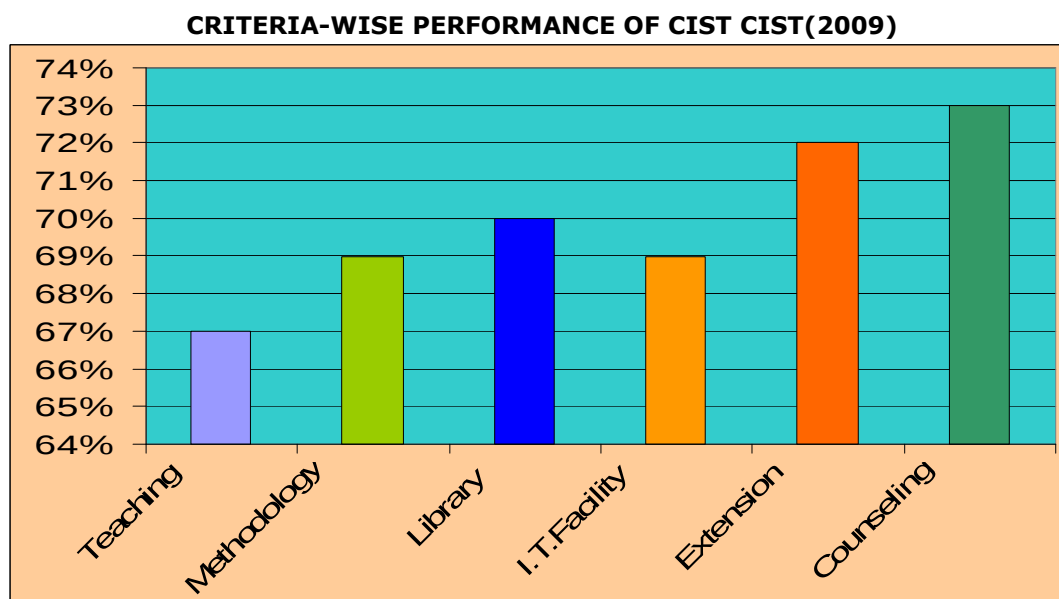


Table projects the continual improvement in library management and readers services. The diagram with the statistics helps the institution to track the record of continual improvement. This vindicates how the ISO standard 9001- 2008 is useful in extending

quality services and further helps in improving the performance of the library on continual basis. The below chart depicts performance of various criteria.



The following records are placed as a proof for having rendered quality teaching and training.

PROOF OF QUALITY SERVICES (Quality Records / Best Practices)

1. Orientation Programme – Attendance signed by the students
2. Certification of lesson plan
3. Circulation and reference statistics
4. Distribution of courseware / library guide
5. Conduct of extension programmes
6. Inter-library lending statistics
7. Feedback analysis report
8. Circulation of new arrival lists
9. Sources recommended and actual procurement
10. Library websites projecting holdings & services
11. Handling customer grievances

PERFORMANCE AUDIT: The management should plan and execute assessment / audit to verify whether the activities comply with planned arrangements to determine the effectiveness of the quality system. The quality assessors or the performance auditors are concerned with verification of conformances. In the course of seeking conformances, they may come across non-conformances, between what you say and what you do.. Noticing the non-conformities, institution has to initiate corrective measures and preventive measures against the defects, verify the result and close the issue of non-conformances.

In fact, it is the management which is going to define policy and objectives, including the duties and responsibilities. It is the management on the other side which is going to give assurance to its customers. ISO auditors are rather concerned with verification and cross checking for "non-conformances", between what the management has said or assured, and what it has practiced. Auditing is not a fault finding mission, it is a fact-finding exercise focuses on;

- System deficiencies
- Human slip-ups (unidentified errors)

Non-conformances are classified, into three categories. Critical, Major and Minor. There will be observations in addition to these three which can be set right in a day or two. Those lapses which may cause injury, and where there is risk to the life of an individual staff or customer, they are noted as critical non-conformances. Those non-conformances that affect objectives to a greater extent are classified as major ones Ex: Lapse in coverage of the lesson plans, lack of internet facility. The minor ones are usually lack of systematic arrangement of volumes in the library , lapse in conducting sufficient classes of orientation lectures for students, lack of reading facilities in the libraries. The observations will be with reference to wrong filing of records, delay in the tractability of records, lack of cleanliness

and so forth, which can be corrected immediately. The management has to initiate corrective and preventive measures to rectify the deficiencies indicated by the auditors from time to time.

CONCLUSION

By opting for ISO certification, the management and the students are assured of the quality of education and training as planned and documented. Therefore, ISO is the one of the best means to control and improve the performance in libraries, where IT based training plays a major role. The process gives opportunity for everyone to involve fully, develop leadership qualities, and contribute creatively. Everyone in the organization will get recognition for his creativity, competency and contribution. By these ways and means, more than anything, there is going to be "work culture" in the organization and appreciation for the quality education and training from the student community. By adopting for ISO procedures or in the process of ISO movement, the LIS schools become more and more 1. Student oriented, 2. Technology oriented and 3. Revenue oriented. Further, QMS

- Provides written procedures that define authority responsibility and interfaces
- ISO provides documented system which controls the activity / education / service, systematically.
- Developing systematic steps for maintenance of gadgets and operations
- Ensures all non-conformities (errors, deficiencies, objections, and complaints) through constant feedback
- Opportunity for the evaluation of the customer satisfaction.
- Opportunity for the monitoring of continual improvement in the system's overall performance.
- Promotes efficiency, competency and cost effectiveness.

In the process of following the quality procedures as indicated in the quality manual, the customer / student becomes the hub of all planning and programming of activities of the organization. The customers are treated as the main focus in the organization. The procedure also supports the management because there is definite way of fixing the individual responsibility and time target to accomplish the expected task. The quality procedures guide the administrators that ensures continual improvement in performance and thereby meet the expectations of customers. The regular or the periodical quality audit in the system helps to overcome human slip-ups and system deficiencies through corrective and preventive measures. Above all, the library resources, including grey resources are exploited to the maximum extent through constant quality auditing procedures.

ISO helps the libraries to easily identify and clearly study the system weaknesses and inefficiency of the staff. The aim of extending quality service and achieving customer delight brings revenue to the library and work culture in the organization and finally creates public image which brings appreciation for the staff, who also feel ultimately delighted. The fixing of duties and responsibilities eliminates anxiety from the individual librarian/faculty or management whether or not the part work will be attended to in time or not. Above all, there will be continuous feed-back from the students which helps the management to set the things in right order applying corrective and preventive actions.

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Course and Learning Objective in the Teaching of Grey Literature: The Role of Library and Information Science Education*

Debbie L. Rabina (United States)

Introduction

A study of grey literature in the context of scholarly communication is intrinsically related to the role of grey literature in the knowledge chain and as part of the changing landscape of knowledge dissemination. The established role of libraries as agents of dissemination of scholarly content was, until the advent of digital libraries, guided by commercial vendors who perceived libraries as a venue to promote their business models. Commercial vendors encourage and promote the dependence of libraries on vendors for subscription content (Allardice, 1997). In recent years, increase in subscription costs and low usage by library patrons (University of California), have librarians looking elsewhere for high quality content, paving the way for grey literature to play a more prominent role in collection development.

While the role of libraries in the dissemination of scholarly content has been addressed in the literature (Mackenzie Owen 2002) the responsibility of library and information science (LIS) schools in the knowledge chain with regard to grey literature, has not received much attention. In order to better understand how LIS schools are preparing future information professionals to work with grey literature, a preliminary survey was conducted in 2007 (Rabina, 2008). This research updates results from the 2007 study and further situates grey literature in the landscape of scholarly communication. More specifically, this study asks the following research questions:

RQ1: Is education for grey literature in LIS education in North America non-specific and embedded within larger topic themes or does it receive unique treatment in the curriculum?

RQ2: Are LIS students aware of grey literature and can accurately describe it?

RQ3: Within the grey literature community, who are the most likely disseminators of education for grey literature among LIS students?

Development and maturation of grey literature as a scientific discipline

The most-cited definition for grey literature is "that which is produced by government, academics, business, and industries, both in print and electronic formats, but which is not controlled by commercial publishing interests and where publishing is not the primary activity of the organization" (Farace, 1998). ODLIS (Online Dictionary of Library and Information Science) provides a slightly broader definition focusing on the essence of the literature rather than on its origin: "Documentary material in print and electronic formats, such as reports, preprints, internal documents (memoranda, newsletters, market surveys, etc.), theses and dissertations, conference proceedings, technical specification and standards, trade literature etc., not readily available through regular market channels because it was never commercially published/listed or was not widely distributed" (Reitz, 2004). While definitions proliferate, there is agreement on the main characteristics of grey literature: they are materials that are published by entities whose core interests are not in publishing and, as a result, are typically not marketed or distributed by commercial publishing organizations (Mackenzie Owen, 1997). In summary, grey literature is discussed in terms of its origins, its methods of dissemination, or both.

The research conducted by Sulouff et al. (2005), whose paper is most closely related to the theme of this study, points out that grey literature "takes different forms in different departmental settings" so that a working definition is often based on circumstance. The library sector carries responsibility for the management and processing of grey literature. This role is acknowledged by several researchers (Mackenzie Owen, 1997; Sulouff et al, 2005) although they have written largely about the role that librarians take with regard to grey literature, but little about how librarians learn about grey literature. The role of librarians is described as promoting dissemination and use of grey literature through cataloging, searching, archiving and preservation (Mackenzie Owen, 1997). Gelfand believes that these roles, at least with regard to grey literature, are learned on the job: "training and bibliographic familiarity... does not follow a curriculum or a set of readers or textbooks, but instead studies by doing (Gelfand, 1998).

* First published in Grey Literature in Library and Information Studies. – Berlin : De Gruyter Saur, 2010.

Research regarding grey literature in libraries has focused more on case studies in particular libraries (see Aina, 2000) than on grey literature in LIS education. A review of LIS syllabi, described in more detail below, supports Gelfand's view that education in grey literature is mostly field, and not curriculum, driven.

Thomas Kuhn's theory of the structure of scientific revolutions argues that the point when scientific disciplines change and a paradigm shift occurs within them is the point in which the existing paradigm can no longer account for the observed phenomena taking place with it (Kuhn, 1996). Kuhn's framework has been applied in the library and information science field to identify paradigm shifts in the research and teaching of LIS areas (Richardson, 1986; Smiraglia and Leazer, 1994). Kuhn signals the textbook as a tool that has served as a staple since the nineteenth century of establishment of a scientific field noting that textbooks "expound the body of accepted theory, illustrate many or all of its successful applications, and compare these applications with exemplary observations and experiments (Kuhn, 1996, p. 10). As a relatively young field of research, grey literature has not developed an established textbook and instructional curriculum, but this should not be interpreted as lack of establishment of the field, but rather as an indication of the field's adaptability, particularly in an era where textbooks are being criticized and their sales declining (Howard, 2008).

Library and information professionals are a vital link in the chain that makes grey literature available to researchers, students and the interested public. While on-the-job training is invaluable, the purpose of graduate-level training is that professionals are hired with some baseline knowledge that they bring to the workplace upon graduation. Courses that educate future information professionals in areas relating to grey literature are critical training ground if awareness to grey literature is to increase.

This study aims to identify what students currently enrolled in LIS graduate programs know about grey literature and where they are learning it. Once we have a clearer picture of the training currently available, we can open a discussion between LIS professionals, LIS educators and LIS students to determine how LIS education can best assist in meeting the needs of the current workplace and use LIS education to strengthen the relevance of current graduates to the workplace.

Methodology and data collection

To gauge the current place of grey literature in library and information science education data was collected by several means and from several sources. The first research question, asking whether education for grey literature in LIS education in North America non-specific and embedded within larger topic themes or does it receive unique treatment in the curriculum, was tested by means of course review from the top ten LIS programs in the United States.

The second research question, asking about LIS students' awareness of and knowledge about grey literature, was tested using a closed-form questionnaire, and finally, the third research question, asking who are the most likely disseminators of education for grey literature among LIS students, was tested by examining the bibliometric output of presenters in the grey literature conferences.

To understand where grey literature fits within the courses offered at LIS program, the researcher examined course descriptions and syllabi of the 2009 top ten LIS graduate programs in the United States (U.S. News and World Report, 2009). Data collection from syllabi is often limited by publication practices and policies of individual LIS programs. There is a very wide range of materials available from different programs, from those programs and/or professors that make all syllabi, slides, and notes available on the course open website, to those that provide only a short course description and make syllabi available only through password protected learning managements systems (such as Moodle, Blackboard, etc.). Data for this research was collected from all sources available at each of the LIS programs reviewed, which included in all cases course descriptions from the university's official bulletin, and in some cases, syllabi for individual courses. In addition, the research interests and publications of faculty members in each school were reviewed to identify faculty with research interests in grey literature.

Students' awareness of and knowledge about grey literature was assessed by administering a closed-form questionnaire to LIS students at a mid-size urban LIS program in the United States. The questionnaire was distributed in hard copy during June 2009 in classrooms. In total forty-eight questionnaires were collected with a response rate of 100%. The survey contained four questions in which students were asked of their knowledge about grey literature and where this knowledge was obtained. Data from the

completed questionnaires was entered into an online survey program for further analysis. Limitations of surveys as a data collection method are inherent in the instrument; results are self reported and could be skewed by intentional deception, misinterpretation of the questions, and a desire to please the researcher. To avoid these limitations to the greatest degree possible, the questionnaire was tested for reliability in a pilot study conducted with a small group of students during late May 2009 and the final version was based on their feedback.

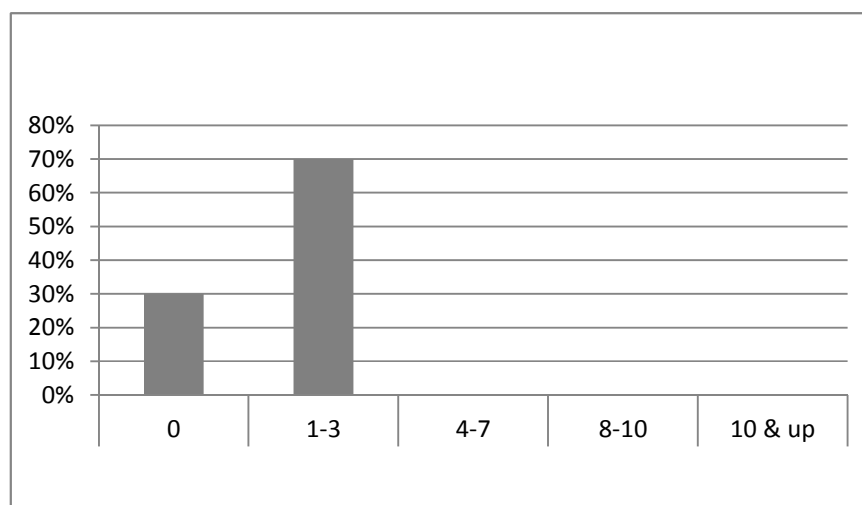
To identify the main agents of dissemination of research and scholarship about grey literature, bibliometric data was collected about the output of researchers publishing in the area of grey literature. Data was collected for one hundred and three researchers who have published in the first four volumes of *The Grey Journal*. Data included role and affiliation of each researcher (librarian, researcher, LIS faculty member), extent of LIS teaching activity (part time, full time or none), total number of publications in *The Grey Journal*, total number of publications in other journals, and h-index of the researcher. Researchers were awarded points for each of these factors with the highest scores identifying the likeliest disseminators of information about grey literature. Data about publications in *The Grey Journal* was collected from the table-of-contents pages. Data about other publications was collected from three journal databases (Library Literature, Emerald and Library and Information Science Abstracts). Data about journal impact factor was collected from Web of Science and finally, the h-index was taken from Scopus.

Limitations of data collection for testing the research question include difficulties in identifying authors by name (e.g., there may be several authors with the same name) and difficulties in establishing the teaching statues of each of the researchers in the study. By using multiple sources and databases the researcher tried to achieve the most accurate results possible. An additional limitation is that data was collected only from traditional forums of scholarly communication such as articles and conference proceedings, and did not address web 2.0 forums such as blogs or professional forums, and it is entirely possible that individuals who communicate about grey literature through blogs or listservs contribute to grey literature education in not insignificant ways.

Results

In order to test the first research question, asking whether education for grey literature in LIS education in North America is non-specific and embedded within larger topic themes, the researcher examined course syllabi, faculty publications and faculty research interests at the top ten LIS programs in the United States, to see how prominent a presented grey literature has in each one on these indicators. Results showed very little activity in all these areas. No courses devoted to grey literature were identified and no courses specifically mentioned grey literature in the course description, or where available, in course syllabi. Very few faculty members in these schools conduct research in the area of grey literature.

Figure 1: Occurrences of GL in total (including syllabi, research interest, publications, etc.) in top-ten LIS programs in North America



These results indicate that education for grey literature is not specific, i.e., not offered in designated courses. The extent to which education about grey literature is covered in other

courses such as collection development, knowledge organization or special collections, could not be fully determined from the information available from the population studied. Only by drawing on the results of students' questionnaire, indicating overall familiarity with the term 'grey literature' can we assume the LIS education covers the concepts and characteristics of grey literature in some courses offered in LIS programs.

The second research question, examining whether despite the lack of structure in education for grey literature, most LIS students are aware of its existence and can accurately describe it was tested by administering a questionnaire to students, as described in the section above. Of the responses collected, 54.2% of respondents indicated that they had heard of the terms grey literature. These results are significantly higher from the 25% found in earlier research (Rabina, 2008) and are attributed to the distribution of the questionnaire in a smaller number of LIS schools than in the earlier study. While the result found in the 2007 study is likely more true to reality, the high result of the 2009 study is supported by the findings of the third research question below.

In order to determine if students understand the nature of grey literature, they were asked to read ten statements and indicate how well the statements describe grey literature. Responses were on a Likert scale with 5 meaning the statement described grey literature very well and 1 meaning that it does not describe it well. The results, in table 17.1, indicate that students accurately identify grey literature and recognize its main characteristics.

Table 1: How well does each of the following statements describe grey literature?

Very well	Statement	Not well
58.6%	Grey literature are materials not indexed by commercial indexers	20.6%
50%	Grey literature describes materials published by non-commercial publishers	23.4%
43.4%	Grey literature describes materials not available in OPACs	19.2%
39.9%	Grey literature describes materials of unknown origin (where the author or publisher can't be identified)	46.5%
24.1%	Grey literature refers to any ephemeral materials	62%
20.7%	Grey literature describes materials not picked by commercial search engines (such as Google and Yahoo)	44.8%
16.7%	Grey literature is similar to open access journals	66.6%
14.3%	Grey literature refers to materials guarded by institutional gatekeepers who deny access to them	75%
10.7%	Grey literature is government information that is not available in the Catalog of Government Publications	53.6%
7.1%	Grey literature refers to materials stored in dark archives that are intended for long term preservation	92.9%

The third research question, asking who within the grey literature community are the most active disseminators of education for grey, was answered by evaluating the research productivity (number of publications, citations, and h-index) of individuals publishing in The Grey Journal, as well as their teaching activity. Each author was given points for research productivity and points for teaching activity. The results, in table 17.2 indicate there is a correlation between teaching and research activity: full time teachers are engaged in higher volume research compared to non or part time teachers.

Table 2: Correlation between teaching and research productivity
(N=99 ; shaded area=correlation)

	Non teachers	Part-time teachers	Full-time teachers
Low research activity	78.7%	50%	7.1%
Medium research activity	13.1%	29.2%	0%
High research activity	8.2%	20.8%	92.9%

Discussion

The results of this study clarify the state of LIS education regarding grey literature. Regarding the prevalence of grey literature in master's level programs of library and information science in the United States, results indicate that grey literature receives little attention in the curriculum. In the master's programs examined, no courses dealing with grey literature were identified and very few occurrences of the term within course materials or scholarly activity within the masters' program were found. The current situation implies that thorough knowledge and working practices with grey literature are acquired in the workplace and not through graduate course work.

In spite of scant evidence of teaching grey literature, a large number of students surveyed were able to correctly describe that nature and characteristics of grey literature, indicating that notwithstanding the lack of structure in education for grey literature, most LIS students are aware of its existence and can accurately describe it. Students perceive grey literature as lacking in bibliographic control (not indexed by commercial indexers and not available in online public access catalogs) and created by non-commercial publishers.

This finding suggests that the scope and depth of knowledge acquired throughout the master's program, allows students to make informed judgments regarding the accuracy of the statements provided in the questionnaire.

The third research question, asking who are the strongest disseminators of grey literature education within the grey literature community, indicate those engaged in teaching are likely to be engaged in high research volume, and are most likely to be powerful agents for teaching future information professionals about grey literature. Knowledge is disseminated in academia through scholarly activities that include teaching and research. While many engage in one or the other, those engaged in both are positioned to have the greatest impact. The data confirms a correlation between the two variables – individuals engaged in full time teaching activity are also engaged in high volume research activity. These two venues, teaching and publishing, provide the opportunity to reach a wide audience.

These findings can assist LIS educators in increasing students' knowledge of grey literature and help establish best practices for grey literature education.

Recommendations for best practices for grey literature education

When identifying gaps in LIS education, the more common approach has been to suggest and outline a suitable course curriculum for that topic (Heintz, 2004; Weimer and Reehling, 2006), but there are several arguments to be made in favor of a cross curricular approach for grey literature education, mainly, the opportunity to expose more students to grey literature than would be possible through a designated course. The cross-curricular approach to teaching grey literature in accordance with the interdisciplinary scope of grey literature content.

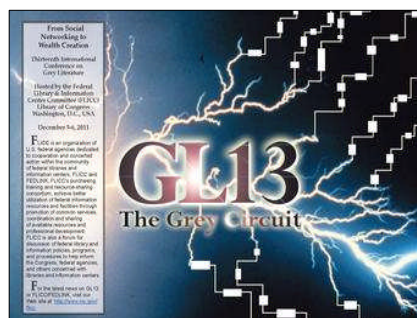
A cross-curricular approach to grey literature education is best offered in several courses, including some that are traditionally part of schools' core offerings, such as knowledge organization and reference, as well as courses that are usually offered as electives, such as collection development and specialized reference courses (for example, scientific information sources, government information sources, statistical information, health information and more). Distribution across the curriculum will address the main areas of importance to library and information professionals dealing with grey literature on two levels: working with the public and working behind the scene. Working with the public addresses the question of the grey literature needed by reference librarians for their work with library patrons seeking information in all areas, whether health information, scientific information or information in the arts and humanities. Working behind the scenes will address questions about the best ways to locate grey literature, to gain bibliographic control over it, to incorporate it in the library's OPAC, website, subject guides and more.

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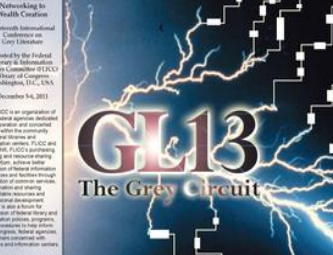
Library of Congress, Washington D.C. USA, 5-6 December 2011



The Grey Circuit From Social Networking to Wealth Creation

Program Outline

DAY 1 Monday	DAY 2 Tuesday
Registration Desk Open 8:00-9:00 AM <i>Including Coffee and Tea Service</i>	Registration Desk Open 8:30-9:00 AM <i>Including Coffee and Tea Service</i>
Opening Session 9:00-10:30 AM <i>Montpellier Room, Madison Building</i> <i>Welcome Address, Keynote, and Opening Paper</i>	Session Two 9:00-11:00 AM Special Collections <i>09:00-10:00 Montpellier Room, Madison Building</i> <i>10:00-11:00 Geography and Map Division, Madison Bldg.</i>
Morning Break 10:30-11:00 AM <i>Beverage Service</i>	Morning Break 11:00-11:30 AM <i>Beverage Service</i>
Session One 11:00-12:30 PM Social Networking <i>Montpellier Room</i>	Session Three 11:30-1:00 PM Open Access and Wealth Creation <i>Montpellier Room</i>
Lunch 12:30-1:30 PM <i>Box Lunches and Poster Set-ups</i>	Lunch 1:00-2:00 PM <i>Box Lunches</i>
Introductions to Posters 1:30-2:30 PM <i>Montpellier Room</i> <i>Two minute briefings by Sponsors & Poster Presenters</i>	Session Four 2:00-3:30 PM Data Frontiers <i>Montpellier Room</i>
Pause <i>Final Poster Set-ups</i>	Pause
Poster Sessions 2:30-4:30 PM <i>Sponsor and Poster Presentations, Mumford Room</i> <i>LIS Graduate Student Presentations, Dining Room A</i>	Closing Session 3:30-4:00 PM <i>Montpellier Room</i> <i>Reports from Chairpersons, Conference Handoff, Farewell</i>
Conference Reception 5:00-6:30 PM <i>Main Lobby, Madison Building</i>	Post-Conference LC Tour 4:00-5:00 PM <i>Jefferson Building</i>



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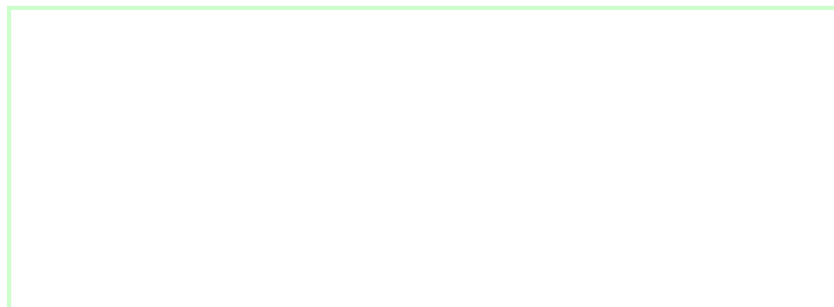
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