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Designing Information Literacy Modules for Distance Learners in India

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ABSTRACT :

Information literacy (IL) emanating from its precursors, library and bibliographic instruction, enables the individuals understand the nature of information; realize information need in terms of quantity, quality, type and format; articulate appropriate search expression to locate it; organize and evaluate the retrieved information for further use in an ethical manner. Being distanced with the institution and its resources, Distance Learners are shorn of the key support services i.e., library and information services and bibliographic instruction. Moreover, availability of wide array of e-resources mystify learners, as they are not privileged to gain knowledge and equip with the skills necessary for (re)searching on and retrieving information available across the globe, by harnessing Information and Communication Technologies.

Information Literacy empowers the Dr. BR Ambedkar Open University (BRAOU) learners with the competency necessary "to cope with the complex and changing information and technological environments and use the information resources effectively". Designing and developing Web-enabled modules is preferable to print modules, as reaching multitude of learners in a flexible and cost-effective manner is feasible. Furthermore, e-modules offer flexible content management, ensuring the integration of IL modules in varying levels and formats. This article presents INFOSEEK, the five-faceted Model for imparting Information Literacy instructions. Also depicts how to integrate ADDIE, an Instructional Design Model to design and develop online Information Literacy Modules.

Keywords: ADDIE; BRAOU; Distance Learners; Information Literacy; INFOSEEK; Instructional Design; Open Distance Learning

INTRODUCTION

Current generation and next generation distance learners are compelled to deal with the complexities that STEP (Social, Technological, Economic, and Political) environs put forth. Predominantly, the technological changes resulted in an exponential growth of information, information media, information communication channels, and radical changes in information retrieval and dissemination patterns. Information Literacy (IL) as an intellectual framework and a continuum of general literacy advances a literate into an 'information literate', who can equip with the necessary skills to update his or her knowledge in accordance with changing scenarios and cope with the afore-mentioned challenges in personal, professional and social lives.

Unfortunately, ODL providers in India and other developing countries neither have a distinctive vision to impart IL instructions as an integral part of 'student support services' nor to integrate it into the core curriculum, for fostering lifelong

learning. Realizing and recognizing IL as the robust foundation for academic and research competence for distance learners, an attempt is made to present What, Why, and How of Information Literacy. Designing Information Literacy modules for BRAOU learners is the integral part of my Doctoral study "**A Study of Information Literacy Skills of BRAROU Learners: Designing an Integrated Information Portal**[i]". An effort is made to design the modules using ADDIE, an Instructional Design (ID) model. This is an endeavor to share the knowledge and expertise gained through my research itinerary, with GRADE (G. Ram Reddy Research Academy of Distance Education established in 2001, caters to the needs of distance teaching institutions, distance educators, researchers, policy makers, organizations and institutions with research interests for promoting distance education), BRAOU, Hyderabad.

The study looked at the information seeking behavior of the BRAOU learners and their modes of information use. Prior to investing learners' approach to information and the sources, the channels and methods used for acquiring information, their library use, including BRAOU library services were explored to assess their acquaintance with the sources of information, their library search skills and information seeking behaviors.

DR. BR AMBEDKAR OPEN UNIVERSITY

Dr. B R Ambedkar Open University (BRAOU), the first Open University of India was established in 1982, with the pioneering efforts of Prof. G. Ram Reddy (architecture of Indian Open University System), with a motto 'education at your doorsteps'.

BRAOU serves the society by providing continuing and lifelong education and equal access to knowledge to a large number of learners, pursuing various undergraduate, graduate, professional, certificate and research programs. BRAOU reaches out to its diverse learners through a wide network of 200 Study Centers and 23 Regional Coordination Centres (RCCs). BRAOU provides the learners with self-learning print material, supported by audio, video lessons and regular broadcast of lessons through All India Radio and Doordarshan (Television) Regional Channel, with few interactive sessions.

BRAOU Objectives

BRAOU objectives emphasize the need to provide equal and equitable educational opportunities, irrespective of various socio-economic impediments and time and space barriers. The objectives of the BRAOU that foster Open Distance Learning are[ii]:

- To provide educational opportunities to those students who could not take advantage of conventional institutions of higher learning.
- To provide equality of educational opportunities for higher education through distance mode for a large segment of the population, including those in employment, women (including housewives) and adults who wish to upgrade their education or acquire knowledge and studies in various fields.
- To provide flexibility with regard to eligibility for enrolment, age of entry, choice of Programs, methods of learning, conduct of examinations and operation of the programs.
- To provide programs complementary to those of the existing Universities in the State in the field of higher learning so as to maintain the highest standards on par with the best Universities in the country.
- To promote integration within the State through its policies and programs.
- To offer degree Programs and non-degree certificate Programs

for the benefit of the working population in various fields and for the benefit of those who wish to enrich their lives by studying subjects of cultural and aesthetic values.

- To make provision for research and for the advancement and dissemination of knowledge.
- To serve as a source of continuing education, consultancy and to provide equal access to knowledge and higher education.

'Equitable access to flexi–education' and 'opportunity for all' undoubtedly furthers Education for All (EFA). Distance Learning (BRAOU) Library Services should be designed in line with the BRAOU objectives, so as to provide access to quality learning resources and foster EFA.

DISTANCE LEARNING LIBRARY SERVICES

Student Support Systems and Services (SSS) are meant to enable the distance learner become self-reliant and competent enough to meet their personal and professional challenges. The BRAOU Student Support Services include (i) Information Support; (ii) Guidance Support; (iii) Tutorial Support; (iv) Counselling Support; (v) Library Support; and (vi) Administrative Support.

Student support services are supposed to provide access to library resources and services, and enrich students' learning. "The learner support system comprises both resources the learner can access in order to carry out the learning process and resources which relate to the mediation of the communication process. The resources of learning process include the availability of and access to courses, teachers or facilitators, learning materials, library facilities, media equipment and community experts" (Garrison and Baynton, 1987[iii]).

Among these support services, library support is key for distance learners, who seek for the same level of resources and services as those provided for their peers on campus, since both have similar information needs. Even though textbooks or Self-learning Materials serve as the basic learning materials, library collection planned and maintained in accordance with the curricula of different courses is desirable to enrich students' learning and further their research activities. However, due emphasis has not been given to library and its information system, as the needed support to enrich student's learning. How is the BRAOU Central Library doing in this regard?

BRAOU Library Services

The Central Library located in the University Campus renders services to teaching, non-teaching staff and research scholars to a greater extent and students to a limited extent. Membership privileges are restricted to teaching and non-teaching staff and research scholars. Students cannot avail borrowing services, as they are allowed to use the resources only for reference purpose.

As of June 2008, the collections are: 1,21,660 books and non-book materials, 239 journals (both foreign and Indian journals) and 15 newspaper subscriptions. Additionally, it possesses the private collections of Sri. V. R. Narla (18000 books), Prof. G. Ram Reddy (1765 books) and Prof. V S. Prasad (700 books). Even though library maintains a rich collection, its resources and services are not made available to the learners to the needed extent.

Automated library facilities are made available within the library to learners and for academic staff within their respective departments. Library operations are automated using Libsys Package. OPAC (Online Public Access Catalogue) terminals for searching the library database replaced the card catalogue. Bibliographic database of the library is made available to all the academic departments through the Local Area Network.

BRAOU is planning to extend its

library network from the Central Library to the Regional Coordination Centre Libraries and Study Centre Libraries, in the second phase, as succeeded to network the Central Library and the different faculties in the campus in the first phase. However, strengthening the BRAOU Study Centre library cells is essential for supporting student's learning.

Commonwealth of Learning (COL) Report on round table on student support services (Croft, 1991[iv]) recommends: (i) provision of resources to augment existing library collections in developing countries in the area of student support services; (ii) provide bibliographical search capacity for research in student support services in distance education.

These recommendations not only emphasise the need to improve library collections to support students learning process but also to impart bibliographic instruction and/or Information Literacy for supporting learners' learning and research endeavors.

Only the registered members have access to the BRAOU Library OPAC and to the instructional brochure on "how to search library OPAC with the aid of key words, Boolean logic operators and Truncation" for retrieving bibliographic information from the library database. Due attention is not given to impart bibliographic instruction or information literacy to students either at the campus library or at various regional and local study centers.

Innovative services such as access to digital collection, electronic databases, online reference services with due focus to Information Literacy are to be integrated into the library's information system, so as to transform library services into learner learning support services.

Information Literacy

Information Literacy has evolved from bibliographic instruction, library instruction, user education and other information skills-focused. In the information intensive societies, bibliographic instruction has transformed into 'information literacy,' which emphasizes the use of Information and Communication Technologies (ICTs) for locating and retrieving appropriate information through critical analysis. Information literacy is an overarching concept that "focuses on information use rather than on bibliographic skills, that is, students must develop information competencies to become effective learners" (IFLA, 2006[v]).

Information Literacy has been frequently used since the late nineteenth century, owing to the pervasiveness of technology and related services and products (electronic resources). Bruce a well-known Australian information literacy researcher, remarks this transition as[vi]:

> "The idea of information literacy, emerging with the advent of information technologies in the early 1970s, has grown, taken shape and strengthened to become recognized as the critical literacy for the twenty-first century. Sometimes interpreted as one of a number of literacies, information literacy is also described as the overarching literacy essential for twenty-first century living. Today, information literacy is inextricably associated with information practices and critical thinking in the information and communication technology (ICT) environment."

Information Literacy as the core literacy in the Information Society enables the learners to: recognize the need for information; access and retrieve information relevant to their information need, evaluate and use information effectively and ethically for decision-making or problem solving.

> "Information Literacy as a 'set of skills' enables an individual understand the nature of information; realize information need in terms of quantity, quality, type and format; articulate appropriate search expression to locate it; organize and evaluate the retrieved information for further use

in study and research in an ethical manner. Eventually, IL focuses on making individuals competent enough for seeking authentic information, for its effective and ethical use.[vii]"

Information literacy, a process-oriented approach to information is the amalgam of information fluency and technology fluency. Information fluency is the ability to understand the nature of information, its varying formats, sources of information, information retrieval tools; whereas Technology fluency is the skills required to harness Information and Communication Technologies (ICT) and their associated search tools to search and retrieve information over the Web. These two types of fluency are coupled with the attitude that enables one to evaluate the authenticity of information, discerning between fair use and plagiarism, acknowledging the source(s) used to comply with the Copyright rules.

Exhibit 1 : BRAOU Research Study Parameters

Regarding Information fluency, **"A Study of Information Literacy Skills of BRAROU Learners: Designing an Integrated Information Portal**" focused on ascertaining the information seeking behavior of the BRAOU learners and their modes of information use. Prior to investing learners' approach to information and the sources, the channels and methods used for acquiring information, their library use, including BRAOU library services were explored to assess their acquaintance with the sources of information, library search skills.
Regarding Technology fluency, BRAOU learners ICT use and use purposes were inquired. Learners' ability to identify keywords, the search strategy adopted for retrieving Web information and the skills to evaluate the retrieved information were ascertained. The study also attempted to garner data about the learners' understanding about Copyright, Plagiarism and Citation styles meant for fair use of information. Additionally, the BRAOU learners' perception about the significance of Information Literacy and their preferred mode and language for imparting IL instructions were sought for.

The research study[viii] defines Information Literacy as "the process of acquiring: **K**nowledge about information, its nature and available forms and formats; **S**kills to fetch the relevant information by sifting the irrelevant; and **A**ttitude for consuming and sharing information, by ethical means and practices". The fusion of the afore-discussed Knowledge, Skills and Attitude (KSA) equips one with Information Literacy skills, imperative for lifelong learning.

Information Literacy for Distance Learners

The technological changes resulted in the overabundance of information that left the users perplexed, 'what to use and not to use!!!' Here arises the need for Information Literacy to demystify the complex information environment. Information Literacy shifts the learning process from 'know what to know' to 'know how to know'. This paradigm shift toward "know how to know/learn" is vital for distance learners, who have been shorn of many 'formal learning' privileges i.e., needed interaction with and guidance from the educators, and access to library and information resources and services for research and development.

Even though they are off campus, they expect to have the same quality and level of library and information services as that of their peers on campus. In fact,

they need additional services than the services offered on a traditional campus, why because, the needed interaction and support from the faculty in their learning itinerary is not on a par with on campus learners.

Since the BRAOU learners do not have access to the library services, resources and tools like their counterparts in formal education settings, they cannot avail the bibliographic instruction services. Additionally, availability of wide array of e-resources mystify learners, as they are not privileged to gain knowledge and equip with the skills necessary for (re)searching and retrieving information available with the institution library and/or with other information providers across the globe, by harnessing ICTs. BRAOU Learners need to imbibe skills to access and retrieve relevant information; evaluate it critically; use it effectively and ethically for accomplishing academic and research, personal and occupational tasks.

Dependence on packaged material as the principal and sometimes only means of information also encourages rote learning among distance students. At the tertiary level students should develop skills to seek, synthesise, analyse and apply information, which cannot happen when reading is limited to prescribed materials, opines Watson[ix], (1998).

One of the percepts of the *Association of College and Research Libraries (ACRL) Guidelines for Distance Learning Library Services*[x] stresses Information Literacy need for Distance Learners as:

> "The library must provide information literacy instruction programs to the distance learning community ... The attainment of lifelong learning skills through general bibliographic and information literacy instruction in academic libraries is a primary outcome of higher education, and as such, must be provided to all distance learning students."

Information Literacy skills are particularly important in an institution where students are at a distance to develop the confidence to work on their own (Baker and Needham, 2005[xi]). Librarians of the Open Distance Learning (ODL) institutions need to play a pivotal role in advocating and fostering Information Literacy, so as to enable learners cope with the escalating complexities that information environs put forth. ODL library practitioners need to design and develop IL instructions in collaboration with the Faculty, Instructional Designers and Developers, which can be made available and accessible to learners in various forms and formats, depending on the availability of resources, physical, human and monetary.

Imparting Information Literacy Instructions

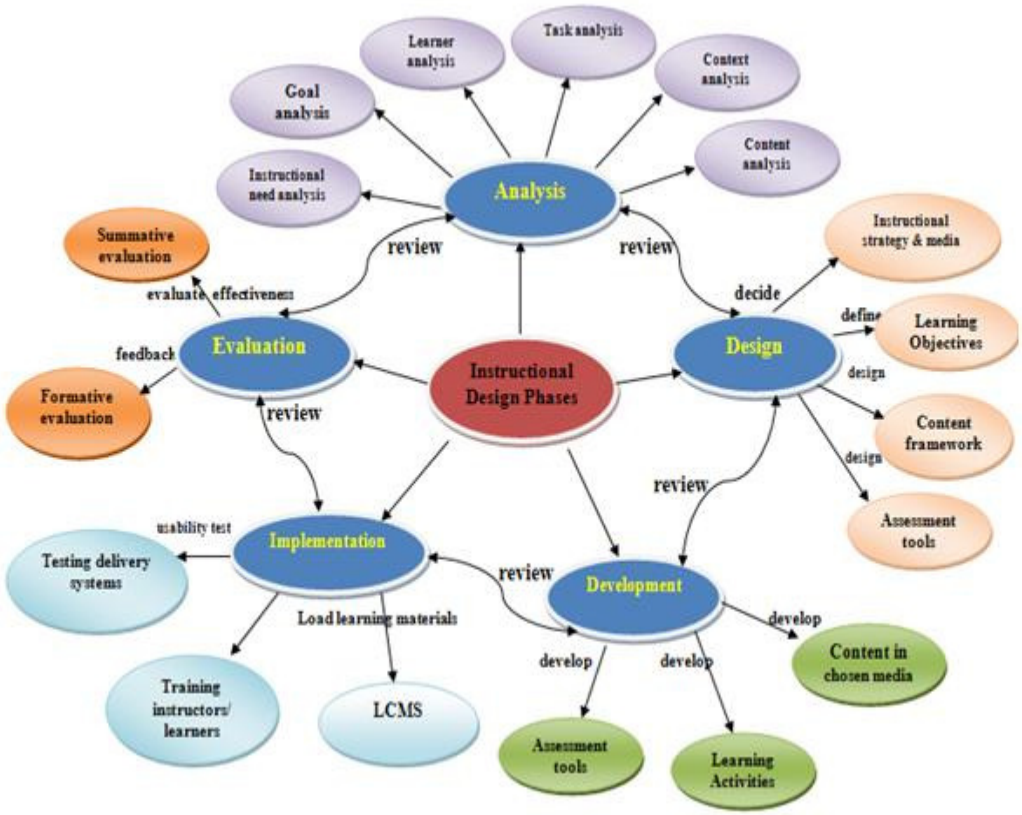
In order to make distance learners as 'wise consumers" of information, Information Literacy instructions can be integrated either with the course curricula or with the library instructional program. Though print-based materials continue to be important in developing countries like India, where access to Information and Communication Technologies (ICTs) is marginally low; shifting to electronic media is preferable as it offers convenient and flexible access to e-instructional services to multiple audiences, regardless of time and space barriers. Additionally, Web-based IL instructions offer flexible content management, ensuring the integration and customization of IL modules in varying levels and formats. Moreover, Web-based instructions not only acclimatize the learners to the needed ICT ambience but also equip them with the thriving skills.

Web-enabled Information Literacy provides an interactive e-com platform for the BRAOU learners by generating a series of online tutorials that acquaint the learners with: (i) the different sources of information and their available formats; (ii) needed search strategy and techniques for efficient retrieval of information; (iii) criteria for evaluating the information retrieved; (iv) ethics imperative (Copyright and Plagiarism) for effective

use of information; and (v) generating new information for scholarly communication.

For imparting Information Literacy instructions effectively the prerequisites are (i) **Analysis** of learners' and their needs; (ii) **D**esigning learning objectives, content mapping, and modalities for delivering the modules; (iii) **D**eveloping learning modules; (iv) **I**mplementing strategically the instructional program; and (v) **E**valuating instructional system and learning outcomes. All these phases Analysis, Design, Develop, Implement, and Evaluate – together constitute ADDIE (*see* Figure 1). ADDIE, an Instructional Design (ID) Model, serves as a functional model for Online Instructional Systems Design and Development (ISD).

Figure 1: ADDIE



Outcome of each phase of ADDIE serves as an input to the subsequent phase. The output of the Evaluation phase enables us to fine-tune and improve the instructional system in such a manner that may necessitate another cycle of phases i.e., analysis to development, thus, making instructional design a cyclic process.

Analysis of Learners Needs

Designing and developing a usable interface necessitates needs analysis of BRAOU learners. Analysis involves determining their learning, information and instructional needs. Assessing learning needs is a process of identifying the skills gap between *what is* and *what*

needs to be. Garnering data is a prerequisite for analyzing the BRAOU learners' needs.

Investigating (i) BRAOU learners' search and retrieval skills; (i) information evaluation criteria; (iii) knowledge about copyright, plagiarism, citation styles; (iv) preferences to Information Literacy learning modules and platform, enabled to design the Information Literacy Modules.

Exhibit 2: Results of the Study

The Research Study "**A Study of Information Literacy Skills of BRAROU Learners: Designing an Integrated Information Portal"** investigated the BRAOU learners' accessibility to and usability of library and information services and resources; familiarity with and use of Information and Communication Technologies; ability to search and retrieve Web information; competency to evaluate information resources; familiarity with the fair use practices; preferred mode and language to impart Information Literacy instructions.

Since the knowledge about the sources of information (95% of the sample not able to identify the information sources); keywords identification (77% not able to identify keywords for the given statements); use of ICTs (65%); Web searching and retrieving (20% adopted Advanced search strategy); evaluating the quality of information (18% opted evaluation criteria based on quality); organizing information (15.9% were equipped with the skills to organize information); consuming information ethically by conserving the creators' rights (93% least bothered to protect author's rights) and citing the sources (2.3% acknowledged the source) constitute the Information Literacy. From the results, the research study concluded that the BRAOU learner's level of Information Literacy is low.

Designing Learning Modules

The data gathered can be used for designing the instructional modules. Based on the outcome of needs analysis, leaning objectives and learning outcomes; the sequence and format of the modules and content; instructional delivery modes and methods can be devised, which serve as the inputs for developing the Information Literacy modules. Designing a user friendly interface that facilitates easy navigation and access to the Information Literacy Instructional Modules is equally important to enhance the usability.

Several National and International bodies and information professionals put forth various Information Literacy standards or models that serve as guidelines for LIS professionals. UK – The Society of College, National and University Libraries, (SCONUL, 1999) 7 Pillars Model, US – the Association of College and Research Libraries, (ACRL, 2000) Information Literacy Competency Standards for Higher Education, the Australian and New contextualize according to the needs of their institutions and user Zealand Institute for Information Literacy (ANZIIL, 2004) Standards, South Asia – Empowering 8 Model, (2005) enable the LIS professionals across the globe to adapt and groups. "The guidelines serve as a checklist during the planning and implementation of an IL program, or to reinforce previous information literacy work" (IFLA, 2006[xii]).

Learning Objectives

Needs analysis (*see* Exhibit 2) reveals that the BRAOU learners' Information Literacy level is low. Learning Objectives derived from the Needs Analysis are listed below.

Exhibit 3: Learning Objectives

Upon completion of the Information Literacy modules, learners will be able to:

1. **Recognize** the need for information
2. **Demonstrate** understanding of the nature of information
3. **Use** the Web, the Internet and associated information retrieval tools;
4. **Adopt** best search strategy for searching and retrieving information;
5. **Evaluate** information retrieved based on its credibility, authenticity and currency;
6. **Organize** information for further reference and use;
7. **Consume** information effectively for decision-making and problem-solving;
8. **Update** knowledge and **upgrade** skills in line with the changes in respective functional domains;
9. **Share** and **communicate** the research findings and innovative ideas and practices among peer groups.

Each learning objective (highlighted) specified in behavioural term, indicates the anticipated performance (learning outcome) of the participants. The afore-listed Learning Objectives specify the anticipated and accepted performance behaviour or the ability to be developed. For developing the instructional material and learning activities, these learning objectives serve as review parameters.

First, the **behaviour or performance** to be accepted as evidence that the learner has changed; second, the **conditions** under which the behaviour will be demonstrated; and third, the **standards or criteria** of acceptable performance against which the success or failure of the learner will be judged.

INFOSEEK – FIVE-FACETED MODEL

Content Framework is proposed as INFOSEEK, the five-faceted model. The five facets (Learning modules) of the INFOSEEK (*see* Exhibit 4) model impart information literacy and enable a learner: to understand the nature of information and its various sources and formats; adopt a search strategy proceeding from simple search to advanced search procedures. Alongside, these modules enable the BRAOU learners to validate and evaluate the retrieved sources for meeting his or her information need. Also, enable the learners to widen their knowledgebase by consuming information effectively and disseminating information research findings through scholarly communication.

To outline the 'five facets' of Information Literacy Instructional Programme, sub-modules and chunks to be developed under the INFOSEEK model are exhibited below:

Exhibit 4: INFOSEEK

INFO **Info**rmation fluency

- Understanding the nature of information
- Information generation cycle
- Primary, secondary and tertiary sources of information
- Various forms and formats of information
- E-resources

S **S**earch and retrieval

- Gaining knowledge about the various information channels and search and retrieval tools
- Fluency with the various access tools
  - Catalogues (OPAC), bibliographies, indexes and abstracts, databases, subject gateways, search engines, directories, digital repositories
- Adopting appropriate search strategy
  - Formulating search expression
  - Broadening and narrowing search
  - Reformulating the search string

E Evaluating critically

- Assessing the quality of information retrieved
  - Credibility of *information provider* (author or publisher), and authenticity, objectivity and currency of information

E **E**ffective and **E**thical use

- Consuming information for the accomplishment of tasks
- Conserving Copyright to avoid plagiarism
- Using citation styles (APA, MLA, Chicago Style etc.) for acknowledging the source(s) used

K **K**nowledge building and sharing; and **K**eeping current

- Generating new knowledge in a form and format usable
- Communicating research results and innovative ideas among the peer groups via scholarly journals and virtual communities

Keeping current with and stay informed about emerging knowledge; new developments and practices in the domain(s) interested.

- Widening existing knowledge base
- Registering with RSS feeds Listservs (mailing lists), e-groups, virtual communities and subscribing to RSS feeds, e-alerts, and e-newsletters relevant to individual area(s) of interest.

Each module embeds the reflective learning activities that enable constructive learning among the BRAOU learners. Reflective exercises aid in formative skills that students gained are to be devised and deployed over the portal. evaluation of the learners, whereas for summative evaluation, online assessing the IL assignments, exercises and quizzes are to be designed. Summative evaluation

mechanisms, meant for.

Glossary supplements the learning modules. Additionally, various visual aids such as pop-up window and rollovers are to be integrated, wherever necessary. These visual aids facilitate maintaining concise modules instead of lengthy text, so as to retain the attention of the BRAOU learners.

EVALUATION STRATEGIES

In addition to defining learning objectives, evaluation criteria to assess learners' performance are also to be designed during the Analysis phase. Evaluation Blue-print, giving Weightage for each concept and process described in each module is to be designed. Deciding on the type of test (objective or subjective), type of questions (multiple choice, quiz, activities, matching the test items, labeling the components of a process etc.) is equally significant.

While devising the evaluation Blue Print, Weightage should be given to (i) Content area (topics); (ii) objectives (Bloom's Taxonomy of educational objectives[xiii] – Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation help in constructing test items); (iii) types of questions. Both learning objectives (*see* Exhibit 3) and evaluation strategies are interdependent; i.e. strategies for measuring learning outcome should comply with the anticipated outcome. Designing evaluation Blue Print is a collaborative effort of LIS professionals, Instructional Designers and Subject Matter Experts (SME).

INSTRUCTIONAL STRATEGY AND MEDIA

Mode of instruction may range from stand-alone courses to online tutorials through formal class settings, small group sessions, one-on-one encounters, written guides and brochures, course-integrated instruction, audio-visual presentation, online instruction.

Print media or Online media is to be decided based on the available resources, physical, human and fiscal resources. Print vs. non-print (electronic and online) is to be researched, taking into consideration users' convenience in terms of access and use. Online tutorials is the feasible option to reach out to the unreached, since the ICTs offer flexi-access to the BRAOU learners wherever they may be and whenever they want to access the IL modules.

Though online modules offer flexibility for both learners and developing team, Information Infrastructure with uninterrupted accessibility and usability; trained staff with requisite skills to design and develop Information Literacy modules; perennial sources of funding for planning, execution and maintenance serve as the decisive factors.

Developing Information Literacy Modules

The outcome of the Design phase is to be utilized for the actual creation and/or development of learning modules and evaluation instruments. Initially, Information Literacy instructional modules can be developed using plain text. However, multimedia effects are also to be incorporated to make the course content interactive, so as to engage learners in the constructive learning process. Using rich media for the modules is to be decided based upon the availability of Broadband connectivity and various plug-ins and accessibility to the BRAOU learners.

Developing Tools

Various Authoring Tools, viz., Macromedia, Captivae, Lecora etc., serve the said purpose. Alternatively, Learning Content Management Systems (LCMS) or Course Management Systems (CMS), viz., Breeze, Elluminate, Moodle, WebCT can be considered for developing and delivering Information Literacy modules.

In addition to the Five Instructional modules, **About INFOSEEK,** an introductory page should inform the

learners about the aims and objectives, learning outcomes of the Information Literacy instructional program; user registration process, use of the Learning Content Management System.

Developing Team

Developing the Instructional Modules is a collaborative work and the library staff need to team up with:

1. Instructional Designer;
2. Subject Matter Expert (SME);
3. Content Author / Developer;
4. Programmer / Developer;
5. Graphic Designer / Media Producer.

Here, the Library practitioner's role is to interface with the afore-mentioned team members to develop and deploy an effective Information Literacy instructional system.

IMPLEMENTATION

Implementation involves two sessions, viz., pre-session and post-session. Pre-session is to identify the team that would help in successful implementation. This help team may include the development team (afore-mentioned) and implementation team (systems administrators). Post-session involves the loading the learning modules into the Learning Management System (LMS) and deploying the virtual learning system with the assistance of the help team. Now, the LMS is ready for accessing files and measuring the effectiveness of user interfaces and learning modules.

Both Alpha testing and Beta testing are significant to validate the Information Literacy modules developed. Alpha testing is meant for testing the various subsystems i.e. technical compliance and usability testing, before deploying "Information Literacy Modules" for use by the BRAOU learners.

Beta testing is equally valuable to test the validity inviting not only BRAOU learners but also external groups, such as Subject Matter Experts (SME) and/or peer groups with similar project design and development experience and expertise. Based on their feedback, needed amendments i.e. refining the structure and content are to be made, so as to make the Information Literacy learning modules more effective for learners.

Raising awareness and feedback from the users, user groups and experts is critical for effective implementation of Information Literacy instruction. Awareness creation about the significance of IL as an integral part of general literacy among instructors and/or educators of BRAOU is vital, alongside raising awareness among the BRAOU learners during their contact sessions. Additionally, BRAOU Website, library brochures and other media learners gain access, can also be used to publicize the IL program.

EVALUATION

Evaluation phase is meant to determine the impact of the Instructional System designed and developed. Evaluating the Information Literacy Instructional System developed and developing evaluation techniques for assessing learning outcomes are the sub-tasks of this phase. Among the various Evaluation models, CIPP and Kirkpatric's Four Lever Model are widely used in education.

Evaluating Instructional Program

Instructional system or program evaluation is the systematic investigation of its effectiveness in improving the learner's performance and competence. Auditing the Information Literacy instructional system or program is to identify the strengths and weaknesses of the learning context, learning modules, learning systems implementation. Evaluating learning and instructional modules aid in assessing whether facilitates effective learning and brings the desired outcome or not. Evaluating the Learning Management System is for

ensuring the usability of 'learner interface', i.e. whether interface is navigable, leaning modules are accessible and usable as intended or not.

The CIPP (Context, Input, Process and Product) Model[xiv] is the popular model used to evaluate educational and instructional systems. CIPP, a systems model facilitates evaluating (i) the learning context - needs analysis; (ii) inputs – availability and adequacy of resources, viz., money, material (infrastructure), and men; (iii) process – formative evaluation of instructional program implemented; (iv) product – summative evaluation to gauge the effectiveness of instructional products in line with the learning objectives. CIPP evaluation model helps in strengthening the Information Literacy Instructional Program; updating the content; and restructuring and redesigning the modules, if necessary, for enhanced usability.

Evaluating Learning Outcomes

Kirkpatrick's Four Level Model[xv] formed the basis for evaluating human performance across the globe, especially in corporate training and development and academic domains. Kirkpatrick emphasises to proceed through all the four levels to determine a training program's impact on trainees' or learners' performance.

Kirkpatrick Four Levels of evaluation are: (i) reaction, (ii) learning, (iii) behaviour; and (iv) results.

- The **first level Reaction** is to determine whether the instructional programme motivated learners for learning and development. Smile sheets are used as feedback forms to gauge the participant's reaction, positive or negative.
- The **second level, Learning** is to measure the success of the instructional programme in terms of its effectiveness, i.e. whether the participants improved their knowledge, skills and tuned their attitude in accordance with the changing needs and demands, both individual and organizational. Pre-tests (before training) and post-tests (after training) are conducted on participants. This pre-test and post-test are common practices in Information Literacy programs. But, actual application of the knowledge and skills acquired or change in attitude is measured at the next level.
- **Behaviour level**, the third level is to assess 'transfer of training', i.e., 'performance change', along the lines of the learning objectives. Whether the learners are applying new knowledge, skills, or attitudes day-to-day functioning is to be measured. This post-training performance is measurable with the support of the teachers or educators, who are the actual performance evaluators.
- **Results, the final level is** to measure the success of an instructional program, which can be related to productivity, sales, profit, employee turnover and product quality in corporate training. However, for Information Literacy instructional programmes, the factors to be considered for evaluating learner's achievement are:
    - How capable the learners are at identifying 'sources of information'.
    - How proficient the learners are with the Information and Communication Technology (ICT) tools and required software packages.
    - How efficient the learners are in identifying keywords and adopting appropriate search strategy.

- How competent the learners are in using search tools and search interfaces.
- How capable the learners are in evaluating the quality of information resources.
- How fair the learners are in conserving Copyright and Intellectual Property Rights of the creators.
- How conversant the participants are with the Citation formats for acknowledging the resources consumed.

Imparting instructions aims at narrowing the skills gap, which needs to be assessed periodically using different evaluation techniques. Learning activities and exercises, quizzes within the module enable formative assessment of learners. For summative evaluation, assignments, individual and collaborative (group) are to be devised to evaluate the knowledge and skills learners imbibe. Various Open Source Learning Content Management Systems (LCMS) or Course Management Systems (CMS) are with in-built evaluation mechanisms.

INFOSEEK, the Five-Faceted Model devised for Information Literacy Instructional Program is an endeavor to provide the development team (BRAOU Library Staff et al.) a comprehensive understanding of the issues associated with design, development and implementation and evaluation processes. INFOSEEK Model may serve as the prototype for other ODL Library professionals to embark on similar projects.

SUGGESTIONS AND CONCLUSION

The contemporary era, wherein individuals need to work in the technology-infused environs, makes it imperative for distance learners to fill the gap between the theoretical knowledge (know what to know) gained through Self Learning Materials (SLM) and skills (know how to know), so as to enable them befitted in the competent and transforming world. In order to compete with their peers in the Information Society, BRAOU Learners are to be equipped with information literacy. Information literacy empowers the learners with cognitive and functional skills, making them "wise consumers" of information.

In order to make the BRAOU learners information literate, Information Literacy instructions should be so designed that equip the learners with technical know-how, proficient search and retrieval practices, critical perspective on contemporary information sources and services available, and fair use of information. Mode of imparting Information Literacy instructions should be decided keeping on the resources and infrastructure available. INFOSEEK, the five-faceted Model designed aims at transforming the BRAOU learners 'information competent'. Rendering ICT-enabled education and information services at learners desktop is relatively a doable task in the technology-driven era. Web-based delivery of IL modules is advantageous to learners, as it offers flexi–access to learners, regardless of time, space and pace barriers.

ADDIE, the most-widely used Instructional Design Model helps in designing and developing usable and effective Information Literacy learning modules. Library staff and faculty collaboration is a prerequisite to the planning, designing and developing Information Literacy program, which enables librarians not only to assess students learning styles for developing IL modules but also to select the resources needed to maintain a cohesive collection for the library. Integrating Information Literacy into the curricula through partnership and collaboration with educators is vital not only for adapting suitable pedagogy, but even for teaching information literacy at the anticipated and

deeper levels.

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