VIRTUAL MEDICAL LIBRARY FOR ONLINE MEDICAL EDUCATION

by

Kalavati Sirdeshmukh*
Srinivasa Rao J**

ABSTRACT

The Virtual Medical Library is an initiative under the Virtual Medical University - Medvarsity's Mission. It has been assigned a critical role in supporting Medical Education and evidence based medical practice. The advents of Internet and associated technologies have become handy for collection development, and management of ever-increasing volume of information available by remote access. The library is actively involved in collection, collation and dissemination of the Internet sources by applying conventional library organization methods and use of modern Internet associated tools and techniques. The methodology is being described in this paper.

Key words: Online Education-Medicine, Virtual Library-Medical

---

* Medvarsity Online Ltd, Apollo Hospital Complex, Jubilee Hills, Hyderabad - 500 033

** Medvarsity Online Ltd, Apollo Hospital Complex, Jubilee Hills, Hyderabad - 500 033

0. Introduction

Virtual Medical University - Medvarsity has been established with a clear objective of complementing education to the Health Care Providers. It provides interactive education with the aid of more sophisticated information technology tools thus facilitating the learning process and creating virtual classroom and global faculty. Medvarsity is backed by two giants in their respective fields, Apollo Hospitals Enterprise in the Healthcare and NIIT in the field of IT. The target group is undergraduate students of medical and alternate systems, postgraduates, specialists, Academicians, Practitioners and Paramedics. Interactive, lively Online Coaching (OLE), Online Courses aimed at Continuing Medical Education (CME) for practioners in different areas, hosting Conferences Online are some of the major activities and the means of disseminating education.

The Virtual Medical Library of Medvarsity is envisaged as a powerhouse of Medical Information and Medical literature, which will store and meet the requirement of the individuals and Institutions associated with Medvarsity and other remote user. The activities, programs and policies of the VMU, basically, drive VML activities.

1. Virtual Medical Library

The Virtual Library is, essentially a synergy created by bringing together the resources of many libraries and information services to the user. It is a system by which users access information that resides solely in electronic format on computer networks, with no binding on physical location of the information. The Virtual Medical Library has to deal with a broad spectrum of Medical information, from common primary care problems to rare specialty problems, from basic medical education to advanced CME Programs, information useful for clinical practice to complicated surgery procedures, etc. What is more important is that the information content has to be authentic and current, of true value to wide range of users – from common public to specialist professionals, and easily accessible to them.

1.2. Objectives

The main objectives set are:

- Build, strengthen, manage, provide access to and maintain comprehensive collections of information resources digital/electronic to support the VMU's academic, and outreach programs. These collections include, in addition to books and journals, information resources in all formats, with an increasing emphasis on electronic information, supported either locally or remotely, accessed through state-of the art information-system.

- To set up network links, with no upper limits in number, with institutions holding highly valuable information resources in the core and allied medical specialty areas.
- Creation and use of modern tools and techniques to provide access via Internet, to on-line Medical information to all its users.
- Providing information packages to the user group.
- Sensitizing potential users of VML through Workshops and training.

To achieve these ambitions, a Central Information File (CIF) System model was conceived to fully support Virtual Library's strategic and service objectives. (Fig. 1) A key role of CIF is to guarantee the integrity of, and continuing access to, the full range of printed, digital and electronic collections.

2. Central Information File - Model

The CIF is the Central Resource around which its information products and services are built. It is an integrated resource base of medical information intended to provide fast access to the already existing wealth of information available elsewhere. Clearly the CIF is proposed to

- Capture conventional and non-conventional sources, systematically categorise and organize for easy access.
- Integrate subsets of traditional library bibliographic data sources, especially MEDLINE database, with the other bibliographic databases available on Internet free or subscribed.

✍ Be the resource base for production of a range of information products and services
✍ Develop interactive search facility by users.

2.1 CIF structure

The CIF comprises of three major components as follows

2.1.1. In-house Resources

- The in-house resources include Library – Physical library of Medvarsity and other libraries with in Apollo Hospital Groups. Such as Books, Conference Proceedings, Reports etc., Database of inputs generated by VMU, eg Teaching material, e-books, live conference proceedings recordings, pictures, image etc.

2.1.2 Internet Resources

The Internet is an important new source of collection development. There is information available both for health care provider and seekers. The very dynamic nature of Internet and "the freedom of to be on the Internet" "any one can put anything" poses challenge to librarians in judicious collection development, cautious collation and systematic dissemination processes**.**

Several approaches are possible in selection of candidate website for Virtual medical Library

- Using search engines such as Yahoo, AltaVista, Google, etc. which provides broadly categorized directory and link.
- Search Internet keeping in view the physical Medical library resource requirements.
- Search based on the terms and concepts covered in the educational material curriculum developed at Medvarsity.

In developing Virtual Library a combination of above methodology were used.

The contents in the Central Information File at Virtual Library are

?? **Full text (URL links)**
- Journal

- Books and part of book

?? **Medical Web sites (URL links)**

- Web Sites providing Databases eg. AIDSLINE, TOXLINE, POPLINE, etc.
- Medical portals providing comprehensive information in different specialty (eg. Ob Gyn, Urology, Cardiology etc.

- Encyclopedic information on Diseases and Disorders or sites with specific disease or disorder
- Learned Societies and Educational Institutes. (eg. Org.)
- Medical Image Databank

Internet is being dynamic resource adding/updating useful medical sites are continuous ongoing effort.

2.1.3 Commercial Databases

- Current Contents- Clinical Medicine
- Medline, BIOSIS, DRUG, PATENT INDEX
- Full text Journals (Proquest, OVID or Dialog)
- Text books, Monographs, etc (C.Ds)
- Database aggregates from Vendor (eg. DIALOG for Consortium Libraries)

3. Resource Organization and Web-enabling

The library mainly deals with digital storage of the collection material could be in the form of

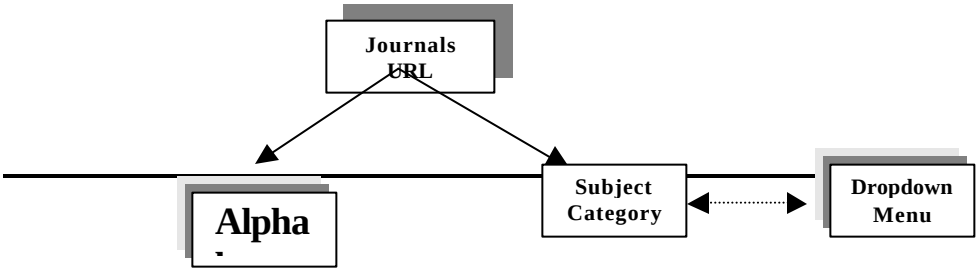
- Internet Addresses (URL)
- Still image formats eg. TIFF, JPEG, GIF
- Document format e.g. PDF, TEXT
- Open document text formats, e.g. XTML, and HTML
  Sound formats etc.,

The library proposes to develop conventional catalogue of all the resources integrating electronic and Internet resources using commercially available web based **Library Software**. OPAC would be the search interface/Internet Gateway for remote end user search.

The major part of the work carried at present and described here is concerned with managing web content and Internet address viz. Uniform Resource Locator (URL) which essentially is a computer file, which includes embedded codes (tags) to designated graphical elements and links.

Categorization of Web site addresses and facilitating web access are described below.

3.1. Journals: More than 2500 Medical Journal addresses are identified, classified based on the medical specialities providing link to home page for easy access of which more than 120 Journals available free full texts. There is continuous effort to link new titles and update.



3.2. Web resources: Web addresses i.e. URL of sites are grouped as follows.

- Learned Societies
- Medical Associations
- Medical Databases
- Diseases & Disorders

Each group is categorized Subject-wise (with drop down menu) and Alphabetical list. User can select the subject of their choice from the menu box to get the list of hyper- linked addresses. ASP, HTML and JavaScript code are being used in developing this Online Service. This resource has been created manually and new links are constantly added form the World Wide Web.
The Virtual Library Online at Medvarsity Site is seen in Fig. 2.

4. Products and Services

4.1 Services:

4.1.1 Online Service

The Online services referred to hear are the services, which are available Virtual Library site, which in library jargon are anticipatory service. These are updated periodically.

?? **Literature Alert** comprising of News and Notes with a focus on

- Substantial advances or significant breakthroughs
- A high degree of novelty
- Significant impact on future research

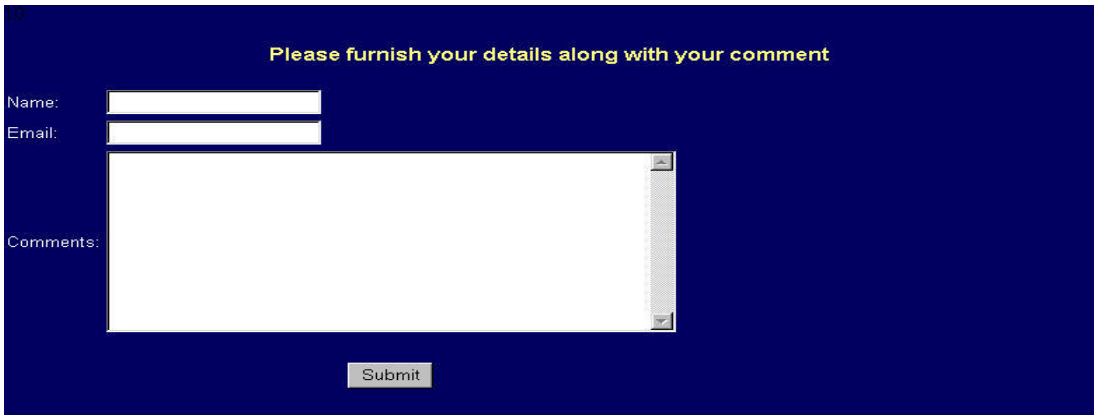
HTML file conversion is being used for enabling Web access

?? **Journal Club**

Journal club is an interactive forum, where medical and health professionals can discuss on an article selected from the recent medical literature. Very often the articles present information, which is incomplete, preliminary or of hypothetical nature. The VML would initiate the forum by giving summary of the article from medical literature. Specialist writes summary for the selected article. Both summary and his comments would set the ball rolling and attract reader's comment Online Both the original summary the chain of comment s all are integral part of the journal club. The feedback from the readers is appended to the article summaries

ASP code is used to receive user's comments, and to redirect those comments to VML mail address. Following is the part of the screen showing provision for users comments.

Journal Club



Journal club is an attempt to generate knowledge bank for sharing. The summary and the users comments would be archived as classified database.

?? **Automatic strategy linked literature Search**

This service provides pre -search strategy link to PubMed database (National Library of Medicine, USA)

A click on the link would retrieve retrospective and current articles from the PubMed database. This section helps students and practitioners in accessing articles on specific diseases or conditions and related web links supporting further reading. Search link to retrieve 'review' articles would be useful to students. In addition to review articles, articles pertaining clinical studies in specific aspects of therapy, diagnosis, etiology, and prognosis of the diseases are also proposed to linked.

Example:

Abdominal Injuries

Therapy
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=search&db=PubMed&term=((Abdominal Injuries [majr]) AND (randomized controlled trial [PTYP] OR drug therapy [SH] OR therapeutic use [SH:NOEXP] OR random* [WORD])&filters=on&pmfilter_EDatLimit=1+Year

Diagnosis

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Search&db=PubMed&term=((Abdominal Injuries[majr]) AND (sensitivity and specificity [MESH] OR (predictive[WORD] AND value*[WORD]))&filters=on&pmfilter_EDatLimit=1+Year

Etiology

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Search&db=PubMed&term=((Abdominal Injuries[majr])) AND (case-control studies [MH:NOEXP] OR cohort studies [MH:NOEXP])&filters=on&pmfilter_PDatLimit=1+Year

Prognosis

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Search&db=PubMed&term=((Abdominal Injuries[majr]) AND (prognosis [MH:NOEXP] OR survival analysis [MH:NOEXP]) &filters=on&pmfilter_PDatLimit=1+Year

Online/Offline Services

?? **Journal Alert**

Journal Alert is a periodical Alert service of Table of Contents and Abstract of the Journals of the users choice. The requests are filled by e-mail.

?? **Document Delivery Service**

Request for full text article

Enter Information about the article.

Journal:	
Title:	
Date:	
Volume:	
Issue:	
First page:	
Author's last name and initials (e.g., Smith BJ):	
Your e-mail ID :	
Postal address :	
Choice of delivery :	e-mail courier post

Submit Clear

Notes:

- You may omit any item if you wish
- Journal titles may be entered in full or as valid abbreviations
- For Date, you may enter yyyy, yyyy/mm, or yyyy/mm/dd. For example, 1998, 1998/03, or 1998/03/06

?? Search request Service: **This is an important service for students and practitioners. In our experience students require literature support to select a project for the thesis particularly during the internship. Further, after selection they would require background education material. The practitioners would require evidence for treatment regime and decision-making. Use of this service can submit the search request by filling the form available online. However the search results are sent by e-mail.**

SEARCH TOPIC(required)
Please describe your topic as precisely as possible. Include any synonyms or other variants for technical terms.
The success of your search is dependent on how clearly you describe your topic.

Would you like your search results limited by language?
- English
- All languages
- Other(Please list):

Would you like your search results limited by date?
- Past five years
- Past ten years
- Other (please explain):

Human Male Female

Infant/Newborn Child including preschool Adult Aged

Would you like to set a cost limit?

Sample relevant Article. Fill up as many as possible

Author:

Title:

Journal Title: Volume: No. Starting page:

ISSN No.:

Submit Request Clear Form

5. Conclusion

Amount of Medical Information available in the net is exponential. Creation of Virtual Library for easy access by organising Internet Resources is the need of the day for medical students and Doctors. Conceptualisation of Virtual library, developing the library based on the Library International standards, viz. AACR2/MARC and other protocols, web enabling, viewing the same on the net has been an exciting and challenging exercise. Further, Medvarsity proposes to develop a Centralized Virtual Library integrating the resources of Apollo Hospital Libraries

Hyderabad, Chennai and Delhi to facilitate sharing and mutual cooperation. VML would also attempt to explore ways and means of educating the users in information searching, interpretation and use of information in day-to-day practice. The library activities particularly handling clinical queries would be the focus of the user service such that the library becomes partner in Evidence based Medical practice. This calls for stimulating the user by training programmes, workshops both for librarians and the Medical Professionals. This is one of the agendas in VML's future programmes.

Acknowledgements

We thank Dr. N.S. Shivam, Director, Medvarsity for his advise from time to time, Dr. Vikram Chatwal, CEO, Apollo Health Street, Hyderabad for permitting us to present our work.

References

1 BIRENBAUM (R). Notion of "virtual library" developing as medical schools cope with rising journal costs. CMAJ. 1996, Apr 15. 154, 8. p 1261-3.

2 BIRRER (R B) and DOHERTY (M). Accessing the scientific literature. The reality of virtual scholarship. Arch Fam Med. 1997 May-Jun. 6,3. 285-8.

3 BRAUDE (R M). Virtual or actual: the term library is enough. 1999. Bull Med Libr Assoc. Jan 87, 1. p 85-7.

4 BROERING (N C). New horizons: the virtual medical library. 1992. Bull Med Libr Assoc. Jul, 80, 3. p 307..

5 CIMINO (C). Bringing a virtual library to a small group classroom. 1999. Proc AMIA Symp. p 501-4.

6. PENTELOW (G M). New technology in medical librarie s. BMJ. 1989. Apr 8, 298(6678). p 907-8.

6 LINDBERG (D A). Global information infrastructure. Int J Biomed Comput. 1994. Jan, 34,1-4. p 13-9.

8. RICHARD (T). Managing Internet Resources: Cataloguing (http://www.ryerson.ca/~trichard/mir.html)

Fig. 1: Virtual Medical Library Conception

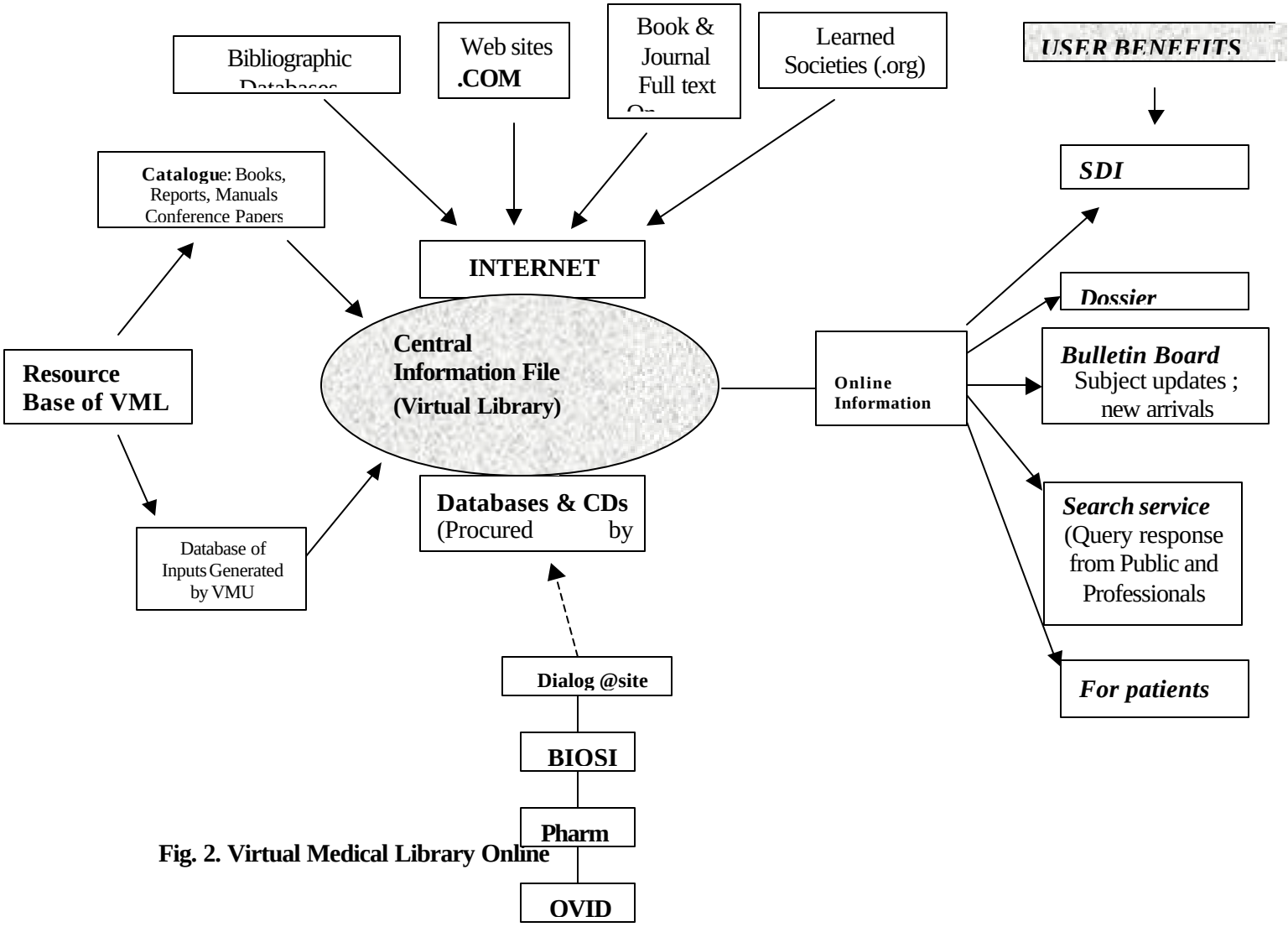


Fig. 2. Virtual Medical Library Online

VML

Virtual Medical Library

- Journal Club
- Literature Alert
- Indian Journals
- Research Publications by Apollo Doctors
- About us
- Contact us

- Associations & Organisations
- Databases
- Diseases & Disorders
- Journals
- Document Delivery Service
- Information Search Service
- Journal Alert