



## ROLE OF INFORMATION TECHNOLOGY IN EDUCATION OF AYURVEDA: A REVIEW

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### ABSTRACT

With the growing popularity of Ayurveda worldwide, the approach towards teaching of Ayurveda needs a paradigm shift. This is to ensure that the global audience understands the concepts of the science in a language that is not alien to them. Though various steps have been initiated in this direction they haven't been enough. The present paper cites some examples of such modern tools of learning incorporated in Ayurveda education and highlights the need for additional work to be taken up by practitioners and teachers to further enhance the global image of this ancient science. An endeavor has been made to present an overview on the role of Information technology in the education of oldest medical science. This article intends to contribute this knowledge by giving a survey of published data regarding the websites, online research journals, newsletters / databases and other gateway.

**Key words:** Ayurveda, Information technology, Modern tool, Journals, Gateway.

### INTRODUCTION

IT aids plenty of resources to enhance the teaching skills and learning ability. The learning resources are being widened and widen. Now with this vivid and vast technique as part of the IT curriculum, learners are encouraged to regard computers as tools to be used in all aspects of their studies. In particular, they need to make use of the new multimedia technologies to communicate ideas, describe projects, and order information in their work. IT has provided immediacy to education. Now in the year of computers and web networks the pace of imparting knowledge is very fast and one can be educated anywhere at any time. The Internet and its Web sites are now familiar to all and among educational elites elsewhere, but it remains of little significance to very many more, which lack the most basic means for existence Audio-Visual Education, planning, preparation, and use of devices and materials that involve sight, sound, or both, for educational purposes. Among the devices used are still and motion pictures, filmstrips, television, transparencies, audiotapes, records, teaching machines, computers, and videodiscs. Only 2% of rural India has access to the web, according to the Internet and Mobile Association of India (IAMAI). That's a small percentage when you think that more than 70% of the population lives outside an urban conurbation.<sup>1</sup>

Ayurveda has always been preserved by the people of India as a codified traditional health care system despite increasing adoption of western medical system during recent time. Ayurveda is now statutory, recognized medical system of health care like other medical systems existing in India. As a result of a major Indian Government research initiative introduced in 2004 which was followed by an increase in the number of published studies. Ayurveda is the major system of traditional medicine in the South Asian region, with over 700,000 trained and certified practitioners in India alone. It is widely used in neighbouring countries such as Sri Lanka and Nepal, and is now in increasing demand among the Indian diaspora in North America and Europe, partly as a result of the new evidence of its efficacy. Furthermore, the 60 or more Indian journals listed in PubMed publish few if any articles on Ayurveda, since most of their subscribers are in biomedicine Hence, Indian Ayurveda researchers may

spend a long time searching the literature, but will invariably miss a few article's.

There were 3,960 research performing institutions in India in 2006, according to *Research & Development Statistics at a Glance*, 2008. Besides, there were 358 universities, 13 institutions of national importance and 20,677 colleges.<sup>1</sup>

### Methodology

Literature search which was cited depend only on the electronic publications media which was further divided in to following:

- A. Database<sup>2</sup>
- B. Pharmaceutical databases : Abstracts, Research journals
- C. Monographs<sup>3</sup>: Herb or Articles
- D. Newsletters : Herbal information ,Dietary supplement
- E. Pharmacopoeia's and formularies
- F. Gateway
- G. Vidhanidhi (Electronic Theses and Dissertations)

#### A. Databases

A database is a collection of information that is organized so that it can easily be accessed, managed, and updated.

1. International Bibliographic Information of Dietary Supplements (IBIDS)  
<http://usda.gov/wps/portal/usda/usdahome>
2. CAM (Complementary and Alternative Medicine) on PubMed  
[www.ncbi.nlm.nih.gov/](http://www.ncbi.nlm.nih.gov/)

#### a). Biomedical databases: PubMed

1. [www.ncbi.nlm.nih.gov/pubmed/](http://www.ncbi.nlm.nih.gov/pubmed/)
2. [www.nlm.nih.gov/bsd/disted/pubmed.html](http://www.nlm.nih.gov/bsd/disted/pubmed.html)
3. Cochrane Library:  
[www3.interscience.wiley.com/cgiin/mrwhome/106568753/HOME](http://www3.interscience.wiley.com/cgiin/mrwhome/106568753/HOME)
4. [http://mrw.interscience.wiley.com/cochrane/cochrane\\_clc/central\\_articles\\_fs.html](http://mrw.interscience.wiley.com/cochrane/cochrane_clc/central_articles_fs.html)

#### b). Indian Databases

1. Indian medicine database  
<http://indianmedicine.eldoc.ub.rug.nl/>
2. Central Council for Research in Ayurveda and Siddha (CCRAS)  
[http://ccras.nic.in/Publications/20081015\\_bibliographyMain.htm](http://ccras.nic.in/Publications/20081015_bibliographyMain.htm)

3. IndMED : <http://indmed.nic.in>
4. Drug Control : <http://www.drugscontrol.org>
5. Ayush research portal : <http://ayushportal.ap.nic.in>
6. National Library of Ayurveda Medicine : <http://nlam.in>
7. Bhagel MS Research's in Ayurveda <sup>4</sup>
8. National Institute of Ayurveda (NIA), Jaipur : <http://nia.nic.in/>

#### B. Research journals in pharmacy and pharmaceutical science

1. National Institute of Science Communication and Information Resources (NISCAIR) [www.niscair.res.in/](http://www.niscair.res.in/)
2. Green pharmacy: [www.greenpharmacy.info](http://www.greenpharmacy.info)
3. Directory of open access journals : [www.doaj.org](http://www.doaj.org)
4. BioMed Central:

BioMed Central is an independent publishing house committed to providing immediate free access to peer-reviewed biomedical research. ([www.biomedcentral.com](http://www.biomedcentral.com))

5. PubMed Central :

PubMed Central is the U.S. National Library of Medicine's free digital archive of biomedical and life sciences journal literature ([www.pubmedcentral.nih.gov](http://www.pubmedcentral.nih.gov))

6. DOAJ :

Directory of Open Access Journals This service covers free, full text, quality controlled scientific and scholarly journals. It aims to cover all subjects and languages. ([www.doaj.org](http://www.doaj.org))

7. Free Medical Journals:

The Free Medical Journals Site is dedicated to the promotion of free access to medical journals over the Internet. ([www.freemedicaljournals.com](http://www.freemedicaljournals.com))

8. HighWire Press :

HighWire Press is a division of the Stanford University Libraries and hosts the largest repository of free full-text life science articles in the world. ([www.highwire.stanford.edu/lists/freeart.dtl](http://www.highwire.stanford.edu/lists/freeart.dtl))

9. Medknow Publications – An Innovative Open Access Journal Publisher: Dr. D K Sahu of MedKnow, currently publishes 150 journals of which 148 are open access ([www.medknow.com](http://www.medknow.com))

#### C. Monograph

A scholarly piece of writing of essay or book length on a specific, often limited subject. Information is given in table no.2

- D. Newsletters: Newsletters are the short informational periodical that is usually distributed to the members of interest group e.g. Herbal information, Dietary supplement. Given in Table no.

#### E. Pharmacopoeia's and formularies:

1. Electronic Version of The Ayurvedic Pharmacopoeia of India AFI – e book
2. Electronic Version of The Ayurvedic Formulary of India (AFI e-Book Ver.1.0)
3. Indian herbal pharmacopoeia of CCRAS and IDMA

- F. Gateway <sup>5</sup>: A gateway is either hardware or software that acts as a bridge between two networks so that data can be transferred between a numbers of computers. National Knowledge Resource Consortium (NKRC) facilitates access to 5,000+ e-journals of all major publishers,

patents, standards, citation and bibliographic databases. Apart from licensed resources, NKRC is also a single point entity that provides its users with access to a multitude of open access resources.

1. <http://124.124.221.7/>: Gateway to access global knowledge search interface and monitoring system.

#### G. Vidhanidhi (Electronic Theses and Dissertations)

Vidhanidhi is Digital library and e Scholarship portal by University of Mysore. In 1999 Prof. Shalini Urs presented a concept note on the role of Electronic Theses and Dissertations (ETDs) in India at the UNESCO Workshop on an international project of electronic dissemination of theses and dissertations.<sup>6</sup> UNESCO in its support for ETDs sanctioned a project to collaboratively write an International Guide for ETDs.<sup>7</sup>

1. [www.vidyanidhi.org.in](http://www.vidyanidhi.org.in)

2. <http://push2check.com/vidyanidhi.org.in>

#### DISCUSSION AND CONCLUSION

In 1999 Prof. Shalini Urs presented a concept note on the role of Electronic Theses and Dissertations (ETDs) in India at the UNESCO Workshop on an international project of electronic dissemination of theses and dissertations.

Education is a lifelong process therefore anytime anywhere access to it is the need. As information explosion is an ever increasing phenomena therefore there is need to get access to this .Education should meet the needs of variety of learners and therefore IT is important in meeting this need. It is a requirement of the society that the individuals should possess technological literacy. We need to increase access and bring down the cost of education to meet the challenges of illiteracy and poverty-IT is the answer.<sup>8</sup>

The information and data which are available on the net is not purely correct and not up to date when it comes to Ayurveda. We can feel the commercialization of Ayurveda, but still a lot of scientific work is going on. Internets support thousands of different kinds of operational and experimental services one of which is online library. We can get plenty of data on this online library. Some of the programs they run to communicate directly provide true and correct information like databases. The incorporation of information technology in teaching is a central matter in ensuring quality in the educational system.

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- 3 <http://cplus.about.com/od/glossar1/g/databasedefn.htm>
- 4 <http://www.thefreedictionary.com/monograph>
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- 6 <http://www.techterms.com/definition/gateway>
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- 8 The UNESCO Guide for Creating Electronic Theses and Dissertations (ETDs) written collaboratively by an international community and coordinated by Shalini Urs, 2002.
- 9 [http://joemoxley.org/sites/Joem\\_Moxley/Publications/Graduate%20Education.pdf](http://joemoxley.org/sites/Joem_Moxley/Publications/Graduate%20Education.pdf)

**Table 1.** List of websites run by Govt. of India:

1.	Ayurvedic Drug Manufacturers Association	www.admaindia.com
2.	Central Council For Research In Ayurveda & Siddha (CCRAS)	www.ccras.nic.in
3.	Central Council For Research In Unani Medicine (CCRUM)	www.ccrum.ne
4.	Central Council For Research In Homoeopathy (CCRH)	www.ccrhindia.org
5.	Central Institute Of Medicinal And Aromatic Plants (CIMAP)	www.cimap.res.in
6.	Council Of Scientific And Industrial Research (CSIR)	http://csirhrdc.res.in
7.	Central Arid Zone Research Institute(CAZRI)	www.cazri.res.in
8.	Department Of Science & Technology(DST)	www.dst.gov.in
9.	Directorate Of Medicinal & Aromatic Plants	http://www.dmapr.org.in
10.	Fragrance And Flavour Development Centre	www.ffdindia.org
11.	Foundation For Revitalisation Of Local Health Traditions (FRLHT)	http://www.iaim.edu.in
12.	Ministry Of Health & Family Welfare	http://mohfw.nic.in
13.	Indian Council Of Medical Research(ICMR)	www.icmr.nic.in
14.	Department Of Ayurveda, Yoga & Naturopathy, Unani, Siddha And Homoeopathy (AYUSH)	www.indianmedicine.nic.in
15.	National Bureau Of Plant Genetic Resources (NBPGR)	www.nbpgr.ernet.in
16.	National Institute Of Pharmaceutical Education And Research (NIPER)	www.niper.nic.in
17.	OUSHADHI , The Pharmaceutical Corporation Ltd., Government of Kerala Undertaking	www.oushadhi.org
18.	Pharmaceuticals Export Promotion Council Pharmexcil)	www.pharmexcil.com
19.	Pharmacopoeial Laboratory For Indian Medicine (PLIM)	www.plimism.nic.in
20.	Indian Institute Of Integrative Medicine (IIIM)	http://www.iiim.res.in

**Table 2 :** Websites for herb monographs or articles

1.	Botanical – a modern herbal US Pharmacist	www.botanical.com/botanical/mgmh/mgmh.html
2.	Association of natural medicine pharmacist	http://www.anmp.org/
3.	Herbal food supplement	www.rhherbal.org
4.	American botanical council	www.herbalgram.org
5.	US Pharmacopeia	www.usp.org
6.	The American herbal pharmacopeia	www.herbal-ahp.org
7.	Herb research foundation	http://www.herbs.org/links/linksmonographs.htm
8.	Society for Medicinal Plant and Natural Product Research	http://www.ga-online.org
9.	American herbalist guild	www.healthy.net/pan/pa/herbalmedicine/ahg/index.html

**Table 3 :** For herbal information:

1.	National Centre for complementary and alternative medicine	www.ncam.nih.gov/nccam
2.	World health organization library alternative medicine	www.who.int/htl/virtuallibrary/english/altermed/html
4.	Herbal medicine	www.pitt.edu
5.	Internet directory for botany ,economic botany and ethno botany	www.helsinki.fi/kmus.botecon.html
6.	Medical herbalism	www.medherb.com

**Table 4:** Journals and newsletters featuring herbal information

1.	Herbal resources inc	www.herbsinfo.com/default.html
2.	Journal of natural products	www.pubs.acs.org/journals/jnprdf/index.html
3.	Fitoterapia	www.indena.it/fitrp.htmml
4.	Journal of ethnopharmacology	www.eslevier.nl
5.	Phytotherapy research	www.interscience.wiley.com
6.	Phytomedicine	http://www.bioexplorer.net/Journals/Botany/more2.htm

**Table 5:** Dietary supplement

1.	University of texas centre for alternative medicine	www.sph.uth.tmc.edu/utcam/default.html
2.	Centre for complementary and alternative medicine	http://www.xmarks.com/site/www-camra.ucdavis.edu

**Table 6:** Other database

1.	Phytochemical and ethnobotanical database	www.ars-grin.gov/duke
2.	Michael moore` s SW school of botanical medicine	http://www.swsbm.com/HOME PAGE/HomePage.html
3.	Henriette` s herbal homepage	http://www.henriettesherbal.com/
4.	Medicinal and poisonous plants	http://www.wam.umd.edu/~mct/Plants/index.html
5.	Plants for a future	www.scs.leeds.ac.uk/pfaf/index.html
7.	Ethnobotany database	www.usda.gov
8.	Medicinal plants of north America	www.usda.gov
9.	AGIS plant references database	www.usda.gov
10.	medicinal and aromatic plants program in Asia	www.mappa-asia.org
11.	Internet grateful Med and Pub Med	www.igml.nlm.nih.gov
12.	National library of medicine` s medline plus	www.nlm.nih.gov/medlineplus
13.	Journal on Web : Online manuscript submission and review system	http://www.journalonweb.com

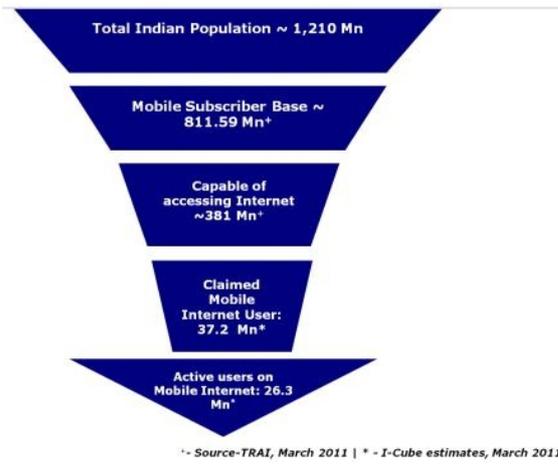


Figure1: Showing mobile internet users 2011



[Source: DST, New Delhi]

Figure 2: Research under the Central Government