

Information Science: Interdisciplinary Characteristics, Indian Educational Scenario emphasizing Growing Trends in West Bengal

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Abstract

India is a leading country for many perspective as far as education is concerned, India is also a leading country; not only in Asia but also in the world. India has so many educational institutes such as universities, research centers, colleges, schools, training centre, and so on. such university and educational institute offers so many courses and so many subjects including interdisciplinary and multidisciplinary subjects. However, in so many subjects India is still in growing stage out of which Information Science is an important subject. India is a big country constituted with near about 28 states and other central Union Territories. West Bengal is a leading state in many perspectives and even in Information Science education too. This paper is also talks about Information Science and its several aspects including nature and characteristics or Information Science; its uses and importance in several sectors. Paper also illustrates Indian higher education at a glance in very brief manner.

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Introduction

Information Science is actually a domain if domains which is a combination of so many subjects which includes Computer Science, Information Technologies, Information Studies, Cognitive Science, Management Science, Mathematical Science, Social Science and so on. Information Science is actually an interdisciplinary broad field responsible for so many information activities which including information processing and management. Information Science is also responsible for so many other information activities such as information collection, selection, organization, processing, management and dissemination with the help of tools, techniques and technologies [05, 09]. Virtually, Information Science is

helpful for the healthy information infrastructure building and complete information system development and utilization. Information Science is a field which mistakenly treated as domain or alternative name of Computer Science or Information Technology; though it is a broad field than that and helpful so many unique activities and skill professional development [10, 12].

Objective

The main aim and objective of this study is includes but not limited to as follows-

- To know basic about Information Science and its basic characteristics;
- To know basic about the Information Science including its root and origin;
- To trace out the internal structure of Information Science and Technology related studies and their contemporary trends;
- To know about the current trends in Information Science education and research in the leading universities and around the world;
- To know about the Information Science education India and various nomenclature offered;
- To learn about the contemporary devices and future potentials in Information Science and Informatics degrees in this field, briefly.

Information Science and Root

Information Science is most controversial domain among the general masses, student, researcher and even academics. Many treated that, Information Science is actually a domain of Information Technology or Computer Science; but it is a large domain than these and combines with some Social Science gradients and Information gradients such as Information Studies, Knowledge Organization and Management, IPR, Documentation and some other Information Processing and Management related aspects [08, 14].

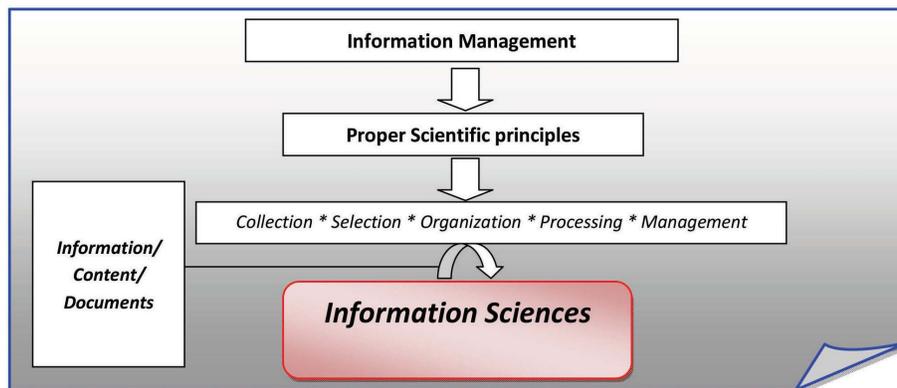


Fig. 1: Depicted the way of healthy and sophisticated Information Science principles

Hence, many academic and educational researcher express that, it is a domain with great concentration of Information and Documentation Science but depends on so many IT/ Computing gradients such as Database Technologies, Networking Technologies, Multimedia Technologies, Knowledge Engineering and so on. So, though initially Information Science was practiced and evolved by the Information Studies and Librarianship Professionals but come to a stage of computing and IT professional's domain and activities [04, 10, 18]. Recent trends of Information Science showing that some emerging gradients are Cloud Computing/ IT, Green Computing, Green IT, Green Information Systems, Usability Engineering, Human Computer Interaction, Business Intelligence, Information Intelligence, Knowledge Warehousing and so on. and all these are IT focused and thus in most of the countries, Information Science is treated as important domain of Science , Technology, Applied Science and Technology and from few are listed Information Science as an academic unit/ faculty of Social Science and Humanities Faculty.

Information Science: Nomenclature and Variation around the world and in India

Information Science is a domain of Science of Sciences. Information Science as originated from the Information Field such as Information Studies, Information Management, Library Science, Documentation and thus around the world it is offered in the conventional department such as in Library and Information Science, Information Studies or in newly evolved department such as IT, Computing, ICT, Informatics and Electronics and so on[10, 17]. Even in some countries, full-fledged universities are established on Information Science and which is mentioned in Fig-2.

<i>Name of the Universities</i>	<i>Place</i>
Tokyo University of Information Science & Technology	Tokyo, Japan
Beijing University of Information Science & Technology	Beijing, China
University of Information Science & Technology	
Ohrid-Macedonia	

Fig. 2: Depicted renowned Full-fledged universities Information Sciences at a glance

In some universities, newly evolved academic units are established with the focus on information beside technological interaction and gradients. Such schools are also treated as Information Schools or I-Schools; even in some countries, associations on I-Schools are also established. Information Science is offered so many cases out of which some are biased free and fully dedicated to Information Science programmes or some courses are with biasness and domain focused. Such domains are Medical Information Science, Chemical Information Science, and Geo Information Science and so on. Though, the flagship programme in Information Science is MS/MSc- Information Science. In some countries and universities, courses are comes with MSc- Information Science with specialization

of HCI, Health Informatics, Bio Informatics, Chemo Informatics and so on[10, 15].

In India, Information Science is first offered in 1993 at BIT Mesra, Ranchi with MSc- Information Science programme. Though programmes is comes with both manual and computational information management. Apart from BIT Mesra, Dr, BR Ambedkar University, Lacknow started MSc- Information Science programmes and then discontinue. Like this, Madras University is another which started MSc- Information Science programmes and from 2009 department back to MSc- Library and Information Science nomenclature. MCIS, Manipal University, Karnataka is another which also offers MSc- Information Science degree. Periyer University is another which not only offers MSc- Information Science but also BSc- Information Science, which is an unique and only available programme in India [18, 22].

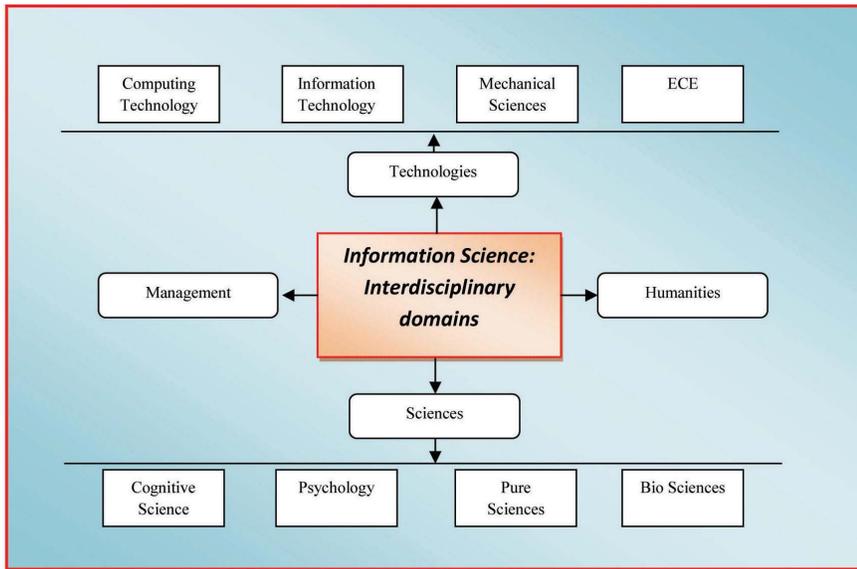


Fig. 3: Showing broader field and sub gradients in relation to Information Sciences

Thus, though India is leading educational hub and combines with so many Universities [More than 600], Colleges [More than 20000], Institute of National Importance [More than 50], and Scientific Laboratories [More than 200] and so on but as far as Information Science is concerned still the number of programmes and domain/ focuses in India is very much limited. During recent years the trends of Information Science is increasing and some more new nomenclature are also offered by some universities like VTU’s BE- Information Science and Engineering Programme.

Information Science in West Bengal

West Bengal is one of the important states of India with near about 8 crore populations and **spread over**—. As far as education is concerned, West Bengal is having more than 400 colleges, 20+ universities. Out of such universities, one is Private and another is Deemed University [08, 14, 20]. Recently the number of universities and colleges are more increased and proposed by the new ruling Government. In West Bengal, leading and most popular Universities are University of Calcutta, Jadavpur University, Bengal Engineering and Science University. Almost all these universities are deals with Information Science related programmes such as IT, Computing, ICT, Computer Science and Engineering, ICT, Computer Applications and so on. A separate list of Universities of West Bengal *listed in fig. 5*.

As far as Information Science is concerned, the leading institutions are Institute of Engineering and Management [IEM], and offers MSc- Information Science programmes at School of Information Technology. Techno India-Saltlake also another Institute which offers MSc- Information Science programmes [14, 19]. A complete list of such schools and departments deals with Information Science degree programmes are *listed in Fig- 4*. Further, not a single West Bengal Based universities offers Information Science programmes with Bachelor Degree, MPhil, PhD Degree. Though, all the running MSc- Information Science programmes under West Bengal state is affiliated with the West Bengal University of Technology, Saltlake, Kolkata, West Bengal. A list of courses gradients and paper is mentioned in the figure-6.

Institutes	Programme of Study
<i>Institute of Engineering and Management , Saltlake, Kolkata, WB</i>	MSc-Information Science
<i>Techno- India, Saltlake, Kolkata, WB</i>	MSc-Information Science
<i>Dr. BC Roy Engineering College , Durgapur, WB</i>	MSc-Information Science
<i>Kotibarsha Institute of Technology and Management, Buniadpur, DD, WB</i>	MSc-Information Science
<i>DATM, Jalpaiguri, WB</i>	MSc-Information Science
<i>Techno- India, Hooghly, Kolkata, WB</i>	MSc-Information Science
<i>Periyer University, Tamilnadu</i>	BSc/MSc-Information Science
<i>Manipal University</i>	MSc-Information Science
<i>Ravensaw University, Orissa</i>	BSc-Information Science and Telecommunication
<i>BIT Mesra, Ranchi</i>	MSc-Information Science

Fig. 4: Depicted Information Science programmes and offering institutions in India

Universities	Popular Courses
West Bengal State University, Barasat; Calcutta University, Kolkata; Rabindra Bharati University Kolkata; Jadavpur University, Jadavpur; Vidyasagar University, Mednapore; Burdwan University, Burdwan; Kalyani University, Kalyani; Uttar Banga Krishi Viswavidyalaya, Coochbehar; Bidhan Chandra Krishi Viswavidyalaya, Nadia; Cooch Behar Panchanan Barma University, Coochbehar; North Bengal University, Siliguri; Gour Banga University, Malda; Diamond Harbour Women University, Diamond Harbour; Sidhu Kanu University, Purulia;	BCA, BSc-Web Technology, BSc-Hardware Technology MCA, BSc-Computer Science [Major] No University Courses, Only DOEACC programmes BTech/MTech-CSE/IT/CAD, Multimedia MCA MCA/MSc-Computer Technology/BSc-IT MCA/MTech-CSE No University Courses, Only informal programmes No University Courses, Only informal programmes No University Courses, A newly established University BCA/MCA/MSc-Computer Science/BSc-IT/Software Systems BCA/MSc-Computer Science No University Courses, A newly established University BCA/BSc-Computer Science-at colleges BTech/MTech-CSE/IT/VLIS Technology No University Courses, Only informal health related programmes No University Courses, Only informal health related programmes No University Courses, Only informal health related programmes BCA/MSc-Computer Science No University Courses, A newly established University
West Bengal University of Technology, Kolkata; West Bengal University of Health Science, Kolkata West Bengal University of Animal Husbandry and Fisheries Sciences, Kolkata; West Bengal University of Juridical Science, Saltlake Aliah University, Kolkata and so on. Kaji Najrul Islam University, Purulia	BTech/MTech-CSE/IT/VLIS Technology No University Courses, Only informal health related programmes No University Courses, Only informal health related programmes No University Courses, Only informal health related programmes BCA/MSc-Computer Science No University Courses, A newly established University

Fig. 5: Depicted the Core Higher Educational Institutes in West Bengal with Computer courses

The running MSc- Information Science programmes is combines with the following gradients of Information Science such as-

- Computation Information Science;
- Library Information Science;
- Software Engineering and Sciences;
- Information Professional and Ethics;
- Mathematical Information Science.

Findings

- Information Science is most popular and interdisciplinary programmes around the world and emerging in domain focused branch such as Health Informatics/ Geo Informatics/ Chemo Informatics and so on;
- Information Science programmes are also offered in some other nomenclature such as I Information Science and Technology, Information Science and Engineering, Information Science and Computing around the world and India too [10, 18];
- Some uncommon programme we find out in Information Field in India as BSc- Information Science and Telecommunication, BE-Information Science and Engineering;
- Still no full-fledged Information Schools association is established in the line of Western Countries though ISIM as first I-School emerged at University of Mysore, Karnataka campus [14, 19].

Common MSc-Information Science general course component at BIT Mesra, Madras University and WBUT

BIT Deemed University: - 1.Foundation of Information Science 2.Theory & Practices of Knowledge Organization and Information Processing 3. Fuzzy Logic & Neural Networks Applications 4 .Internet And Web Technology 5. Data Structures 6.Data Base Management System 7.Operating Systems 8.Computer Communication Networks 9.Management Of Information System & Centers 10.Information Psychology & Information Architecture 11.Research Methodology & Quantitative Techniques 12.Digital Library And Multimedia And Other 2 Electives

Madras University:-1.Evolution of information science 2.information sources 3.Knowledge organization 4.Introduction to information technology 5.Soft skill 6.Management of information centre Information service 7.Information processing-classification 8.Information and Communication technology 9.Information storage and retrieval 10.Information processing-cataloguing 11.Research methods 12.Preservation of information material 13.Knowledge management 14.Marketing of information 15.Digital libraries And electives, internship.

WB University Of Technology:-1. Mathematics for information science 2.Data structure with c/c++ 3.Computer organization 4.Business communication 5.Library and information science 6.Object technology 7.Operating system and system programming 8.Software engineering

9.Information theory 10.Soft computing 11.Digital image processing 12.Values & ethics in profession 13e-commerce

Fig. 6: Depicted General Structure of MSc-Information Science programmes in India

Possibilities

- Information Science programme may be started in the University and colleges campus; where related fields are there like- IT/ Computing/ CSE by adjustment of adjust faculty;
- Information Science programmes may also started as specialization of other IT programmes like- BCA/MCA [Information Science], BSc/MSc- IT / CSE [Information Science], BTech-IT/CSE [Information Science], BTech/ MTech-ECE [Information Science] programme and so on which are running in the universities community;
- By combining IT, CSE, Management Schools, Communication Science departments; full-fledged department or School on Information with Technology focused may be introduced in Universities with existing Infrastructure.

Conclusion

Information is one of the important aspects in today's age and needed in almost all domains such as Government, Health Care, Hospitality, Education, Business and Commercial firm and so on. Information Science is an important domain which offer hospitality to such and thus important to introduce Information Science programmes in the academic unit of universities in Indian Universities as per international trend [10, 16]. As far as, Information Science in West Bengal is concerned, it is no doubt a good symptom compare to other states in India for building healthy and sophisticated Information Infrastructure building.

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