Green Information Science: Information Science and its Interaction with Green Computing and Technology for Eco Friendly Information Infrastructure

Prantosh Kumar Paul

INTRODUCTION

Green Information Science (GISc) is a proposed interdisciplinary domain incorporated in Green Computing and Technological fundamentals and Information Science principles. Though this is a knowledge cluster of Information Studies, Computer Science, Information Technology, Psychology, Cognitive Science, Management Science (from IS domain) and Electronics, Green Technology, Green Computing, Environment Management (from Green Science aspect), GISc may be helpful for information community and professionals for building healthy information infrastructure which should be eco friendly, pollution free, less carbon emission based, less power consuming. Fundamentally all information dealing organizations and institutions may get the potential benefit of GISc if this academic programme is started in the academia of IS. Then green eco friendly information systems will be possible by utilization of principles and thus serve modern day’s policy makers and government authorities.

OBJECTIVES

The main aims of this study are:

- To learn about the professional and industrial utilization of IS before reaching on GISc.
- To learn about the dimension and related nomenclatures of IS.
- To know potentiality of GISc as a specialization of BSc/MSc-IS.
- To learn the potential user of GISc.
- To know the potential and possible degree programmes on Green Information Sciences.
- To learn the main Challenges and issues related to GISc.

ABSTRACT

A Green Environmental policy in today’s age is an urgent requirement in almost all types of organizations, institutions and enterprises, whether it is a government or private, profit making or non-profit making, small or large, production based or service oriented. The increasing rate of carbon dioxide in air creates so many environmental hazards. Therefore organizations are putting environmental agenda during establishment of building, campus or during purchase of equipments, machines, tools which are less energy consuming and recyclable and less carbon based. In this paper aspects of green technology and computing (including building Information Systems) discussed. The requirements of GISc for starting an academic programme for building green eco friendly information infrastructure are also suggested to the academic community.

Key Terms: Green Information Science, Green Computing, Green IT vs Green ISc, Energy Informatics, Information Science and Technology, Academic Community, University Degree programme, MSc-Information Science.
LITERATURE REVIEW

Till date research papers on GISc are very few. But some related works on GISc has already been carried out by some eminent Information Scientists, computer scientists, environmental engineers and geo scientists. Information schools have wider possibilities with green computing utilizations especially for wireless information systems building. Energy informatics and related field like Green computing and technology. Several opportunities are possible which includes, energy saving, virtualization of hardware and software, eco friendly power and information systems designing and management.

Green information infrastructure is the prime interdisciplinary area which relies on electronics, computer and information studies for healthy information architecture designing. Green computing based information system building, which is gaining main priorities in modern days in corporate and academics.

INFORMATION SCIENCE

Information Science or IS actually is a field of fields associated with the subjects which are related to Information as well as technology, directly or indirectly and the field are information studies, computer science, information technology, cognitive science, societal development and so on. IS is responsible for information collection, selection, organization, management, processing and dissemination. Initially IS was treated as domain for information foundations such as information centre, documentation centers and so on. Though, today’s interdisciplinary IS is dedicated to information systems and architecture building of an organization, group of organizations or Governmental enterprises including e-Governance rather than only information centre or information networks applications. Surprisingly IS is mistakenly considered as branch of computer science or it in computing community or even as a branch of library science in library and information community.

However in today’s age it is a broad discipline dedicated to information, its study the behavior and properties of information and takes the help of technology and emerging fundamentals depending upon requirement. IS comes into play in any of the enterprises and areas where information in involved. Thus the involvement of information in libraries evolved LIS nomenclature. Due to the same type of nomenclature IS mistakenly understood that LIS and IS are same field. Though, similar involvement of IS in Computer System / Service bring us interdisciplinary fields like: Computer and IS (CIS) Medicine & IS as Medical Information Science (MIS) Geography and Geo Science with Information Science (GISc). We may categorize IS as an Applied Science which may based on both Pure Science and Biological Science and create new nomenclature like-LIS, CIS, MIS, GISc and so on.

INFORMATION SCIENCE

GISc: Integration of Green Computing and Technology with IS

Green computing is a study and a practicing field responsible for Green Eco Friendly less power consuming computing system. Fundamentally Green Computing aims at designing and developing computing and IT infrastructure which should be based on Environmental policy, Power Management and Consumption, recycling and so on. Green computing and green technology integration brings to us so many emerging academic fields. The integration of green computing and green technology in informatics provide us green informatics, where its integration with business and commercial gradients results in business informatics.

So, as far as applications and utilizations are concerned, the following areas may be benefited or utilized by GISc:

- Almost all the aspects of information systems, its development and designing may be benefitted by use of GISc. By this Green eco friendly, less power consuming, less carbon emission based recyclable information systems designing is possible.
- Information centers, documentation centers, data centre, Information Systems and Networks (ISN), Referral Centers, libraries, internet centers are the largest stakeholders of IS. They can use GISc principles or GISc pass out (Degree holders) for building their concerned organization up to date and environmentally fit.
- For several Information Services like- CAS, SDI, online references and referral services, enterprise resource planning, document deliver services, short stage and large range information services we need to take the help of computer and other electronics peripherals. Thus,
applications of GIsc deal with important impact in information services.

- For building eco friendly E Publishing and for turning publishing departments from manual to electronic mode we can use GIsc principles.
- For healthy information networks and information infrastructure building we need to use computer and information systems. Thus backed by GIsc principles, ultimately a good healthy environment and society can be created.

GIsc: Some Allied Areas

There are so many allied and related areas of GIsc like Geo Informatics (based on spatial Eco Friendly Information System designing), Energy Informatics (based on Power Consumed Information Practice), Green IT (which provides importance on eco friendly, recyclable IT infrastructure building), Green computing (allows only green principle adaptation in computer purchasing, using, designing which is eco friendly and less power consuming)\textsuperscript{12,13}. Thus, only GIsc/ green informatics is responsible for green information system building for organizations, enterprises and MNC’s as well as academic information foundations, such as information centers and libraries, documentation centre for healthy modern energy consumed information division\textsuperscript{15}.

Practically GIsc is responsible for overall green information infrastructure building including Information Systems, Centers, Networks and are applied in MNC’s, organizations and the individual information foundations like information centre, documentation centre, information networks, knowledge networks and the like, the its scope is enormous with larger users and stakeholders.

As an academic programme, GIsc may be offered in IS departments (which must design their curriculum with adequate information and computing gradients) or newly evolved IS schools. Apart from these, GIsc programmes are also possible to offer in computing, IT, Geo Informatics, MIS, information systems departments and schools. It is important to note that GIsc programmes should be based on information, computing and green fundamentals rather than only on IT and green fundamentals (as used green IT, green informatics, and green computing) for sophisticated information infrastructure building.

The nomenclature of GIsc may be:

- Green Information Science
- Green Computing based Informatics
- Green Informatics

So far as level of study is concerned, depending upon requirement this may be started at BSc, M.Sc., MPhil, Ph.D. Level. And the nomenclature of the programme may be a full-fledged or partial as specialization like:

- BSc/MSc/MPhil/PhD— Green Information Science (GIsc)
- MSc—Information Science (GIsc/Green Computing).
- MSc—Information Science (Green Informatics).

GIsc: CHALLENGES AND ISSUES

As an academic programme GIsc has so many challenges. Following are the key challenges and issues of GIsc meant for academics and industrial benefits:

- Academically it needs more interdisciplinary skills in the faculty members. They need knowledge of IS along with computer, cognitive science, operations research and obviously green technology.
- During the start of a course or academic programme for availability of students its industrial and academic acceptance also need to be taken care of.
- It requires a healthy system analysis and design, thus it needs proper fund and policy or planning.
- Running GIsc in the old Information focused IS or LIS courses are really challenging as these schools are totally based or focused on library concept’s
- A creation of awareness regarding the benefits of GIsc is really challenging to the students and research community.
- Unwillingness to change is another big problem.
SUGGESTIONS

- Information School(I-Schools) both newly constituted, which believe in interaction of information-people-technology or existing Knowledge Organization based need to start the programme on GISc as a full-fledged course or as a specialization of IST7,6,15.
- Proper awareness, workshop, seminar, training should be organized regarding the benefits of GIS, its nature, interdisciplinary knowledge gradients and so on.
- Fund from government side and scientific foundations should be available.
- Healthy policy on environment should be scheduled for MNC’s.

CONCLUSION

Information Science is really a wonderful discipline for building healthy information systems and complete information transfer cycle in academics as well as industries. IS based on tools may be classified as manual KO, indexing, documentation focused or computing and IT structured16,17,18. Though, as discussed IS may integrate with other domain with pure science or bio science. Thus, GISc may be treated as specialized IS, incorporated with green computing and green technology fall under pure sciences or pure IS specialized in nature. As like medical information science which is based on medical science and IS integration, Geo-information science and so on1. Green aspects and technologies are most important concepts in today’s age. Thus we need to use green computing and green it and technology in information industry and information infrastructure building and also need to take care of starting new fields or start academic specializations. Information professionals need to put importance on green technology use in information science practices, thus we need GISc for healthy Eco friendly, less power consuming information systems and information infrastructure building. So let us welcome GISc for a greener society powered by technology5,6,3.

REFERENCES

12. www.ischools.org
13. www.infosci.cornell.edu/
23. www.en.wikipedia.org


