

iSchools - the way and need of green and environment friendly, healthy academic development for sustainable world

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ABSTRACT

iSchool or Information School is one of the important school and academic institution, dedicated to information and technological study and research. This is the broad domain combined with many other domains, which are directly or indirectly related to information and computing. The *iSchool or Information Schools* should be related to the subjects like Computer Sciences, Information Studies, Management Science, Information Technology, Library Science, Documentation, and Electronic Science and so on. However, these subjects may be treated as one single domain and named as 'Information Science' or 'Information Science and Technology' (IST). IST deals with computing in electronic gadgets along with general documentation. Here possibilities are there for healthy *iSchool or Information School's* practice which is Green, Eco Friendly and modern academic environment. This paper talks about Eco Friendliness and Green Computing aspects in the field of *iSchool or Information Schools*.

KEY WORDS: Information, Information Schools, IT, Computing, Green Computing, Environmental Science, Academic Unit, University, Environment Development.

1. INTRODUCTION

Information School is one of the important academic innovations in universities recent years. *Information School* is a kind of consortium in which the academic departments/ units, which are connected with the domains information and computers come together to have a healthy environment. Such school deals with so many departments, under one single umbrella and can help in interdisciplinary domain which has a flavor of Information, Management, science, documentation etc. As *iSchools* are dealing with Information and Computing and thus depending on so many IT and Electronics Gadgets (Calheiros, 2011; Paul, 2014; Dikaiakos, 2009), Thus, it is possible to use Green Computing principle and strategies in Information Science Schools or *Information Schools*. Ultimately students of such schools may also learn about the strategies of Green Information Infrastructure building and Development. For training the students, Information schools should coordinate with many organizations which deal with Electronics gadgets, like computer, Laptop, Servers, Networks Devices and so on (Paul, 2014; Clemons, 1986; Foronda, 2011), Thus, in all such cases, Green Computing is possible in Eco and Environment Friendly *Information School* building. Wireless Information Infrastructure may be another alternative for building healthy and Eco Friendly Information Systems (Buyya, 2009; Paul, 2014).

Objectives: The main aim and objective of this study includes

- To know basic facts about *Information Schools* and their characteristics
- To identify the role of Green Computing in Environmental Friendly *Information Schools*
- To plan the strategies of Green Computing and Green Information Infrastructure
- To estimate location and to manage waste to yield paperless solution.

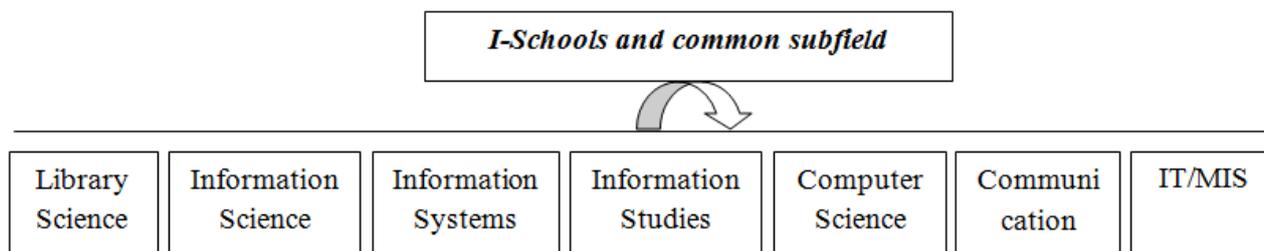


Figure.1. Depicted some academic domains which are closely related with Information and needs Green and Eco Friendly attentions

2. METHODS

Information Schools: Basics: The concept of *Information Schools* emerged during the last decade of the last century when some academic units combine together and came as *Information Schools*, as shown in Fig.1. *Information School* is dedicated to the interaction between 'Information Technology and People'. The *Information School* is combination of some departments which are from Science, Technology, Engineering, Humanities, and Management Science. But one thing common in *Information Schools* is concern towards society or community services. The community stakeholders may be from education, business, Government, Health and Medicine and so on (Gurbaxani, 1991). *Information Schools* try to produce such skilled human who are able to provide solutions for Information and

Technology infrastructure. *Information Schools* combine with some information & computing related departments such as—

Science: Computer Science, Computer Application, Information Science.

Engineering: Electronics and Communication Engineering, Mechanical Engineering, Computer Engineering.

Management: Business Administration, Management, Public Policy Making.

Humanities: Cognitive Science, Library Science, Documentation Science.

Green Computing and its practice in the Information Schools: Green Computing is an important and emerging computing practice helps in Energy Efficiency, reducing Carbon Emission, Eco Friendliness and so on. Green Computing ensures easy and energy efficient computing design and development (Gurbaxani, 1991; Harmon, 2009). For better Green Computing environment, the following practices may be helpful.

- During purchasing of computers in the I-Schools, it is essential to checkout whether it is built with Green and Eco-Friendly algorithm or not. That is to check whether it falls under 'Energy Star' category or not.

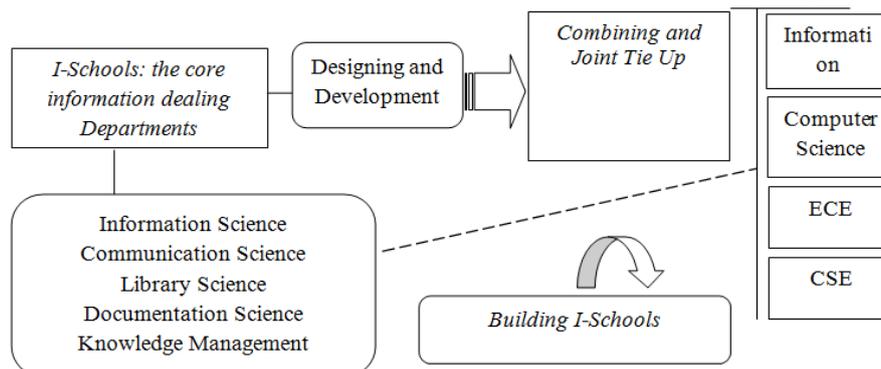


Figure.2. Way to introduce Information Schools and proper strategy for merging and joint tie up

- Apart from purchasing of computers, some other equipment are also needed in the I-Schools such as servers, Network Interface Card, Router, Switch and other Network Devices. Thus it is essential to check that such devices are also energy efficient (Hooper, 2008; Karthikeyan, 2012).
- *I-School* is a combination of some schools in one umbrella and all the departments (such as computer science, IT, Management Science, Information Science, Documentation, Information Studies) as shown in fig.2. Somehow related with computers for better information practice. Thus, in every sub department or section computer lab will exist. In this case, it is essential to check whether all the computing devices are needed or not. If not needed at a time than 'switch off' mode in such computer and electronic gadgets should be automated.

Usage of Less Documents and Recycling for Environmental Protection: This is the age of Globalization and Global Warming too. Virtually, changes in climate recently noted by the scientists, worldwide and the ultimate result in rise of temperature, rising sea level, high attitude, and wind channels and so on. Virtually the increasing value of carbon dioxide is responsible for temperature rise (Paul, 2013, 2014; Kettinger, 1995), Apart from these, the increasing production of greenhouse gas is also responsible for global warming. Many academicians and scientists believe that the reason behind this scenario is human activities against environment. Actually fossil fuel combustion contributes more than 90 % of CO₂ into the atmosphere. Use of document in paper form (hard form) is also a major reason in carbon emission. Each year millions and millions of ink and toner cartridges, paper are wasted contributing to disaster. Thus recycling of such items can improve the protection system of earth (Kumar, 2010).

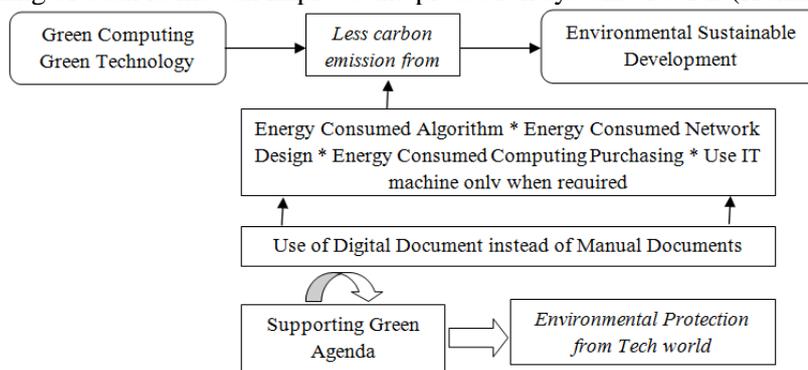


Figure.3. Depicted Role of Green Computing and Technology for Environmental protection

As far as complete Green and Eco Friendly *Information School* is concerned, the schools may adopt less paper usage principles and side by side recycling approaches. In many countries, and also in India, awareness is

given in the field of recycling of natural things (Paul, 2014; Subashini, 2011). Usage of Several Electronic Gadgets which are easy to use anyhow helps in promoting digitization and in turn for improving the earth's protection. Also, e-governance, e-commerce, e-learning etc. are improving the earth towards Green Environment. Ultimately an affective planning and strategy is very much important and urgent for Green and Eco Friendly academic unit design which are based on IT and Computing devices (Paul, 2014; Schmidt, 2009).

Wireless Information Systems practices in *Information Schools*: Challenges and Opportunities: In recent years the concept of solar energy rises for base stations. The organizations are moving towards Wireless Information Systems too for healthy and environmental friendly IT practices. As *Information School* deals with so many departments and almost all of them are dealing with computers, they may use Wireless Information Systems for governance/ administration. This kind of e-governance is less energy consumed, power saving, less carbon emission based (Paul, 2014; Wang, 2008; Wiggins, 2012). For more and complete Wireless Information Systems *I-Schools* need to adopt following steps as shown in fig.4.

- Design, develop as well as usage of effective networks which are less/ energy consumed and environmentally fit.
- Usage of equipment, electronic systems and gadgets which support in less energy consumption. As *Information School* is a big academic unit and thus communication among these departments become easy with Wireless Information Systems. Thus complete stakeholders and component are needed for such information systems. The devices are Digital Book, Laptop, handheld electronic gadgets and so on (Paul, 2014; Watson, 2010).

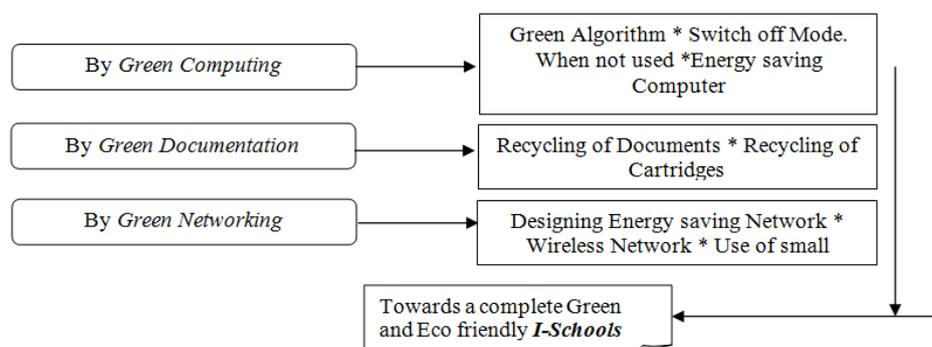


Figure.4. Showing way to introduce Green Information School powered by Eco Friendly Technologies

- A laptop and similar mobile devices like I-Pad, Tablet, notebook are always ecofriendly and less energy consumed as these are based on Green power consumption algorithm and circuits. So in *Information Schools* it is better to use such as devices for better and Green Information Infrastructure building (Paul, 2014; Wu, 2012).
- Laptop and similar Electronic gadgets [such as LCD Monitor] instead of desktop computers and CRT monitor for healthy and sophisticated Information System building. Laptops are designed with less energy consumption algorithms, with specially designed circuit. Thus useful in low voltages and even reduces energy consumption. Apart from this, Laptops also come with the benefit of wireless or Wi-Fi capability which also allows healthy and modern *Information School's* practices, information collection and so on (Paul, 2014).
- A wireless *Green Information School* should coordinate with some other components such as wireless sensor networks, location management systems [such as GPS/Bluetooth], and Multi-functional mobile and small devices, Digital Books instead of hard copies.
- Wireless Local Area Network is another area which supports Green IT or similar systems. It uses less energy, providing mobility without losing the speed. Also uses an access point to connect without cabling and many users can be connected at a time. It works within 100 m. Thus it is useful in the *Information Schools* and may connect one department to another. Even in information foundation such as Information Centre, Documentation Centre, Information Networks, Wireless LAN may be used. Thus during design of WLAN based *Information Schools*, WLAN card design, hardware interaction, software, protocol design play valuable role (Paul, 2014).

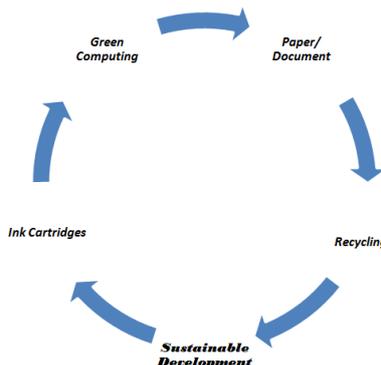


Figure.5. Way of recycling and building Sustainable Development

- Even if WLAN is not possible then, WLAN may be chosen for audio-video communication. *Information School* is a combination of few departments and in many cases *Information School* is constituted with adjunct faculty members and thus a student may get his/her lesson by WLAN based E-Learning devices. Even if it is multi campus based *Information Schools* then also possibilities of WLAN are there. Anytime and anywhere, communication becomes easy. However a healthy and sophisticated WWAN depends on healthy and number of Base Stations [BS]. During Designing of Networks, it is very much essential to keep in mind, the distance factor between Base Station and Mobile Devices. Here use of Green Energy may be possible instead of Conventional Energy (Paul, 2014; Wu, 2012).
- Wireless Information Systems can include Wireless Sensor Networks [WSN] for collecting information and wireless LAN and WAN for disseminating Information. Thus here it is possible to use less energy consumed sensors for complete Green aspects in *Information School*. Thus, WSN such as sensor and similar devices are also important to keep in mind.

3. RESULTS

Findings

- *Information Schools* are the large academic units, formed by combining few other departments. Thus all basic discipline are directly or indirectly related with *Information Schools*.
- The main agenda of I-Schools program is connecting 'People and Information-Technology'.
- The installation of Green Computing, Green Information Systems building is the academic side of *Information Schools* Green practice.
- Still many *Information Schools* are not aware about Green aspects and thus they are not adopting principles of Green Computing;
- Government, Ministry and agency level initiative is still limited in many cases.

4. CONCLUSION

Green Computing is one of the important names in today's age of sustainable development and interdisciplinary Environmental Sciences. It is widely applicable in so many areas such as educational field, Multi-National Companies/ Corporate, Governmental Departments and so on. For better utilization of Green Information Infrastructure in the *Information Schools*, it is essential to design network properly, keeping in mind about the entire sectors such as Wireless LAN-MAN-WAN, Sensor and so on. However, in broad categories, Green and Eco Friendliness in *Information Schools* includes Designing Green Power consumed Network Sensor, Computing Devices, Document and content Management Systems and so on. Thus use of Green Computing and Technology in *Information Schools* may build a healthy Eco Friendly Information World.

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