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A Study of Attitude of Women at Higher Education towards Green ICT for Sustainable Development and Globalization of Technology

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ABSTRACT: *This analysis aims to bring together the findings and key points from a review of a significant part of the available literature associated with attitude of women at higher education towards Green-ICT for Sustainable Development and Globalization of Technology and integration of ICT into their teaching. Studying the obstacles to the use of ICT in teaching and learning environments is crucial because this knowledge could provide guidance for ways to enhance technology integration and encourage greater use of ICT in a sustainable manner on the part of female teachers themselves. Identifying the fundamental barriers may assists teachers and educators to overcome these barriers and become successful technology adapters.*

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INTRODUCTION

Since the beginning of human civilization, mankind has lived in a competitive relationship with nature. His pursuit of progress, comfort and security has resulted in increased stress on environment, particularly since the industrial revolution. Consequently the life sustaining environment has been forced to transform more rapidly than ever before. Human tendency to exert a negative influence on ecology has resulted into rapid increase in the green house gases in the atmosphere, large scale deforestation, loss of biodiversity; sever land degradation and environmental population. Problem has been attracting widespread attention of community and the seriousness has properly understood by knowledgeable peoples like scientist and technologists.

Development affects people in different parts of the world in different ways. It also affects people differently, depending whether they are male or female. There have been a number of improvements to women's lives in the past twenty years. For example, female life expectancy is increasing; more girls are going to school; more women are in the paid workforce; and many countries have introduced laws to protect women's rights. In the same proportion the practice of ICT use also increased among women and in the present educational system women have an active participation both as teacher as well as students. As per the International Federation of Green Information and Communication Technology (GICT) - GICT or ICT sustainability is the study and practice of environmentally sustainable computing or IT. This can include, "designing, manufacturing, using and disposing of computers, servers and associated subsystems- such as monitors, printers, storage devices and networking and communications systems- efficiently and effectively with minimal or no effect on the environment". The goal of GICT or green computing are similar to green chemistry- reduce the use of hazardous materials, maximize energy efficiency during the product lifetime and promote the recyclability or biodegradability o defunct products and factory waste. GICT is important for all classes of systems ranging from handheld systems to large scale data centers. Many corporate IT departments and educational institutions have green computing initiatives to reduce the environmental effect of their IT operations. Merging the two business- needs of ICT and sustainability can help us to raise the profile and importance both. Currently this is largely a missed opportunity in most organizations. In a **Global Action Plan** survey during 2007, 74% of ICT staff where 30% is women, declared that, they have no knowledge or little information about GICT and their ICT departments are not integral to the GICT agenda set by their organizations.

Therefore, it is clearly seen that there is a great scarcity of awareness in the total population. Some researchers have shown that, people had no knowledge or very few knowledge about GICT, GICT practices and strategies. Thus with its special emphasis on science and technology, industry and commerce, the education has to make its contribution towards the consciousness of the GICT practices and strategies. In the same context, it also envisages to contribute to the balanced and greened use of science and technology not only to solve the problems of environmental degradation but also to design appropriate measures during the course of development activities. Education including formal education, public awareness and training, should be recognized as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment

and development issues. While basic education provides the underpinning for any environmental and developmental education, the latter needs to be incorporated as an essential part of learning. Both formal and non-formal educations are indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns. It is very critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision making.

Origin of the Problem

ICT have become within a very short time, one of the basic building blocks of modern society. Many countries of the world, now regard understanding ICT and mastering the basic skill and concepts of ICT as a part of core education along with reading, writing and arithmetic. However there is a misconception that ICT generally refers to "computers and computing activities". This is fortunately not the case, although computers play a significant role in modern information management, but other technologies and/or systems also comprise the phenomenon that is commonly known as ICTs. Near the 1980s the term "computers" was replaced by "IT" (information technology) signifying a shift of focus from computing technology to the capacity to store and retrieve information whenever required. This transformation was followed by the introduction of term "ICT" (information and communication technology).around 1990, when e-mail started to become available to the general public. According to a UN report (1999) ICTs covers internet service, telecommunications equipments and services, information technology equipments and services, media and broadcasting, libraries and documentations centers, commercial information providers, network based information services and other related information and communication activities. According to UNESCO (2002) information and communication technology (ICT) may be regarded as the combination of "informatics technology" with other related technologies, especially communication technology. There are various kinds of ICT products available and having relevance to education, such as tele-conferencing, e-mail, audio conferencing, television lessons, radio broadcasts, interactive radio and tele-counseling interactive voice response system, audio cassettes and CD- ROMs etc. have been used in education for different purpose. New technologies have the potentials to support education across the curriculum and provide opportunities for effective communication between teachers and students in many ways that have not been possible before. ICT in education has the potentials to bring about changes in ways of teaching. However, this potential may not easily be realize Due to importance of ICT in society and possibly in the future of education, identifying the possible obstacles to the integration of these technologies in schools/ colleges would be an important step-in improving the quality of teaching and learning. Although educators appears to acknowledge the value of ICT in education, but difficulties are continue to encounter during the process of adapting it.

Many studies have been conducted to investigate barriers to the integration of ICT in education. This paper provides a meta-analysis of this literature that aims to present the perceived barriers of technology integration in education and particularly teacher level barriers are highlighted here.

There is a term in sociopolitical movement, combining feminism and environmentalism is called Ecofeminism". Ecofeminism says that women are closer to nature than men are. This closeness, therefore, makes women more nurturing and caring towards their environment. Ecofeminism encompasses a variety of views but has a focus of patriarchal oppression and the social constructions relating to women and the environment. Some indicate the biology of women as the reason behind the closeness, while others credit culture and historical factors. An ecofeminist believes in a direct connection between oppression of nature and the subordination of women. Vandana Shiva, is credited with bringing ecofeminism into public consciousness by her reports of the Chipko movement. The Chipko movement also led to the formation of anti alcoholism.

Today, women struggle against alarming global trends, but they are working together to effect change. By establishing domestic and international non-governmental organizations, many women have recognized themselves and acknowledge to the world that they not only have the right to participate in environmental dilemmas but they have different relationship with environment including different needs, responsibilities, and knowledge about natural resources. This is why women are affected differently from men by environmental degradation, deforestation, pollution and overpopulation. Women are often the most directly affected by environmental issues, so they become more concerned about environmental problems. Studies have shown the direct effects of chemicals and pesticides on human health. According to United Nations Chronicle journal researchers have found an association between breast cancer and the pesticide DDT and its derivative DDE; and also one study by the World Health Organization has found that women who are exposed to pesticides face a higher risk of abortion. These kinds of health problems cause women to feel more responsible regarding environmental issues.

Sustainable development is a human subject. The issue associated with sustainable development can be seen as one of the basics of any society. Therefore, so far its major field of concern has been for the environment, but its applicability has been extended to wrap almost each human attempt. GICT is a practice as

well as process which involves human's intelligence, decision making efficiency, planning and management skills, power of imagination, entrepreneurship, develop-ment and production with environmental safety etc. The discussion is a principal element in education for sustainable development. Environmental education is the fundamental education to study the sustainable development. Therefore, environmental education can be able to make a path for education for GICT too.

GICT is an idea of education which aims to empower the individuals to assume liability to build a sustainable future. The thought of GICT touches aspects of the institutional and social framework. There has been increasing identification of the significant role of education in promoting GICT since 1992 Earth Summit in Rio de Janeiro. However, any individuals or organizations do not have all the knowledge to develop learning systems with GICT which are essential to maintain sustainable development in the specific surroundings.

In the area of higher education, the various programme should be influenced by striving for GICT. The objectives of higher education are to discover new tools to deal with big problems such as pollution, climate change, energy, biodiversity, environment conservation etc. The responsibility of higher educational institutions is to develop awareness about GICT and at the same time develop new methods and new approaches to explain the sustainability to everyone.

In this context following Questions Arise in the Mind of researcher-

1. Is there any awareness of GICT practices and strategies among women in higher education?
2. If there any prospect of integration of GICT in higher education?
3. The extent of accessibility of environmental and developmental education related to GICT in higher education.
4. Attitude of women in higher education towards Green –ICT for Sustainable Development and Globalization of Technology.

Therefore in the present article, the researcher is going to explore the awareness and attitude of women at higher education towards Green ICT and the amount of values towards Green ICT practices and strategies for sustainable development and globalization of technology.

Definition of the operational terms used

Awareness

Awareness is the ability to directly know and perceive, to feel or to be of events. It is the state or quality of being conscious of something.

Attitude

Attitude is an expression of favor or disfavor, inclination and feelings, prejudice or bias, pre-conceived notions, ideas and convictions towards any specific topic, person, place, thing or event.

Values

Value denotes the degree of importance of any object or action, with the aim of determining what actions are best to do or to describe the significance of different actions.

Green ICT

Green ICT is a pioneering way of using ICT that consists of policies and practices which deal with environment sustainability by minimizing carbon footprint, ICT waste and by optimizing energy consumption and by conserving natural resources for cost effectiveness, sustenance of ICT and to save the planet.

Higher Education

Higher education is an optional final stage of formal learning that takes place after secondary education. This is often delivered at universities, colleges, institutes of national importance and institutes of technology etc. and award degrees or professional certifications.

Green ICT at Higher Education Institution

Global environmental problems due to climate change are affecting directly many countries energy and industrial policies. Now a day's higher education institutions and universities are under high pressure to adopt more sustainable approaches to ICT use. Over the years, there has been a significant increase in number of colleges and students enrolled in Higher Education across the nation, with more than a hundred colleges and institutes affiliated to some universities. Hence green ICT implementation at institute has developed as key factor to attain the cost effective solutions and sustenance of ICT.

Women at Higher Education
In the present study we are working with educational women. Such as female administrators, female principals, female teachers, female students, female staff members etc. at higher education.

Sustainable Development
Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Globalization of Technology
It is a transnational merger and shared production agreements of technology to maximize returns between countries of the world and sought to bring together with complementary interests and strengths.

Objectives of the Study
1. To study the awareness, attitude and values of GICT practices and strategies among students, teacher, teacher educators, administrators and staff members of higher education.
2. To compare the awareness, attitude and values of GICT practices and strategies among students, teacher, teacher educators, administrators and staff members of higher education.
3. To study the consciousness about causes of major environmental and developmental issues related to GICT in local context at higher education.
4. To study the accessibility of environmental and developmental education related to GICT at higher education.
5. To study the awareness, attitude and values of GICT practices and strategies for sustainable development and globalization of technology among students, teacher, teacher educators, administrators and staff members of higher education.

These objectives will be attained with respect to stream and courses only on women participants.

Research hypothesis
1. Awareness, attitude and values of students, teacher, teacher educators, administrators and staff members towards GICT practices and strategies.
2. Awareness, attitude and values of students, teacher, teacher educators, administrators and staff members towards GICT practices and strategies are not independent to their stream and course.
3. Consciousness about causes of major environmental and developmental issues related to GICT in local context.
4. Accessibility of environmental and developmental education related to GICT in higher education.
5. Awareness, attitude and values of GICT practices and strategies for sustainable development and globalization of technology among students, teacher, teacher educators, administrators and staff members of higher education.

Research Design
The main objective of the study is to study the awareness, attitude and values of GICT practices and strategies in higher education for sustainable development and globalization of technology. Keeping in view the nature of study the researcher used **survey method**.

Population
Population for the study consist of all female students, teachers, teacher educators, administrators and staff members of Undergraduate, Post-Graduate and B.Ed. course of University of Allahabad in Allahabad city.

Sample
The researcher had select the students, teachers, teacher educators, administrators and staff members of Undergraduate, Post- Graduate and B.Ed. course. The method of sample selection is "Stratified random sampling". The sample consist 30 persons (each category). The size of sample is 150.

Total sample (N) = 150
Tool Description
A questionnaire was made and validated by experts (educators who have served as Curriculum developers, experts in ICT and professors of Educational Technology). The tool covers three dimensions –
1. ICT applicability in teaching leaning material with maximum environment sustainability.
2. Effectiveness of software usage with minimum Bio-hazards.

3. Integration of Green ICT and environment education at higher education.
4. Usage of Green –ICT for sustainable development and globalization of technology.

Procedure

The questionnaires were distributed among and e-mailed to students, teachers, teacher educators, administrators and staff members. Any query regarding any item of the questionnaire was either answered in person or over the phone and through e-mail. The answers were collected after seven days to ensure that the responses were not impulsive but thoughtful.

Analysis of Data

The responded questionnaire, collected from all the samples were scored in the following way: Each YES answer is counted as "3"; each NO answer is counted as "2" and each CAN'T SAY answer is counted as "1". Based on this scheme, a score is obtained for each of the participant. '**Percentage Analysis'** have been used to analyze and interpret the data.

Delimitations of the Study-

1. The study will be limited to the female participants only.
2. The study will be limited to the students, teachers, teacher educators, administrators and staff members of Undergraduate, Post- Graduate and B.Ed. course only.
3. The study will be limited to the students, teachers, teacher educators, administrators and staff members of Undergraduate, Post- Graduate and B.Ed. course in Allahabad city only.
4. The study will be limited to the students, teachers, teacher educators, administrators and staff members of Undergraduate, Post- Graduate and B.Ed. course in University of Allahabad, IGNOU and UPRTOU only.

Findings of the Study

1. 82% women have knowledge about environment pollution and global warming.
2. 63% women have knowledge about environmental sustainability.
3. 50 % women are aware about Green ICT practices and strategies.
4. 57% women believe development and modernization causes deterioration to the environment.
5. 75% women blame deforestation the main cause for environmental pollution.
6. 30% women believe use of ICT causes environmental pollution.
7. 45% women agreed to adopt Green ICT practices and strategies for environmental sustainability.
8. 80% women demand more awareness and information related to Green ICT.

Educational Implications

Taking into consideration the findings of the results certain educational implications can be drawn in order to develop a positive attitude in students about information and communication technology.

- In order to improve the quality of teaching- learning process at school level information and communication technology should be introduced at teacher education.
- In order to facilitate the development of students at school level information and communication technology should be enriched both in the school and teacher training programme.
- At the teacher training level information and communication technology facilities must be used to organize various activities to get improve result.
- The teacher trainees should be given opportunities to prepare and use educational slides – as well as multimedia (including movie, animation, sound, etc.)
- Internet facilities and video conferencing facilities should be extended in all B.Ed. colleges so that the teacher trainees can make reference to the best resource materials and interact with their colleagues or educational experts.
- The curriculum should be revised and include various educational software developed in the field of education.
- Teacher trainees should be given opportunity for power point presentation or multimedia presentation with multimedia projector while doing practice teaching.
- Online study materials should be provided to the students.
- To get the study material online schools must strive for providing information and communication technology facilities and their active use in the campus.
- In order to attain important lectures of the specialist from the world, the use of information and communication technology is unavoidable. Hence schools should promote the use of information and communication technology in the campus. Therefore, on the basis of above findings it can be said that most of the women in higher education have knowledge and are aware about environment, environmental pollution,
  sustainable strategies and Green ICT. But they are not familiar with the technical terms and strategies.

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