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3-26-2010

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Aderonke O. Adeyemi
Covenant University, deroyemi@yahoo.com

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http://digitalcommons.unl.edu/libphilprac/343

Library Philosophy and Practice 2010

ISSN 1522-0222

ICT Facilities: Ergonomic Effects on Academic Library Staff

Aderonke O. Adeyemi
Centre for Learning Resources
Covenant University
Ota, Ogun State, Nigeria

Introduction

The term Information and Communication Technology (ICT), which is often used interchangeably with Information Technology (IT), encompasses methods and techniques for automated information handling and retrieval, including computers, telecommunications, and office systems. It encompasses business data, conversations, still images, video, and multimedia. The (IT) sector will probably continue to expand (Ivergård, 2000). ICT has fundamentally affected the operations of library and information services. The application of ICT to library operations has made electronic cataloguing and online reference services possible, along with other library operations, such as digital information, online access and file transfer, networking and sharing of information resources.

Aina (2004) observes that ICTs have been implemented in information handling and processing because of the increased workload involved in coping with an information explosion. Madu and Adeniran (2000) describe the values of IT and ICT. According to them, ICT makes it possible for an individual or a company to meet all their information-related needs rapidly and easily. Shrestha (2000), referring to OECD (2000), asserts that the rapid movement of information across local, national, and international borders is contributing to revolutionary changes that include the academic library.

The use of ICT requires working at a computer. Working long hours on a computer may result in some form of ergonomic problems. More and more workers are suffering from backaches, neck-aches, sore wrists, arms, and legs, and eyestrain which are all symptoms of ergonomic problems. Ergonomics is a discipline that extends across all aspects of human activity. It is also known as human factors/human engineering, and is the design or modification of the workplace to match human characteristics and capabilities. Ergonomics was developed as a consequence of problems presented by new work systems. It was developed through the same processes that led to disciplines like industrial engineering and occupational medicine (Bridger, 1995).

Employers are always faced with balancing efficiency and productivity with safety and comfort. Good ergonomic assessment and remedial design can ensure both. Every workstation should be designed with both the worker and the task in mind, so that work can be performed comfortably, smoothly, and efficiently. Positioning or using your computer improperly can lead to injuriy, from the short term discomfort to serious conditions like Carpal Tunnel Syndrome. ILO (2008) rightly notes that for many workers in developing countries, ergonomic problems may not have a high priority among the health and safety problems they face. The large and increasing numbers of workers affected by poor work design, however, make ergonomic issues important. These issues have become points of negotiation for many unions. Launis (2007) observes that in Finland, good ergonomics are widely implemented, supported by extended education in universities and the support of legislation and normative standards. Launis points out that the original broad definition of ergonomics has remained an academic discipline, but in practice it is used to mean physical aspects of workplaces.

Statement of the Problem

The adoption of ICT has resulted in the globalization of information and knowledge resources. The rapid increase of computers in academic libraries has not been accompanied by changes in workstation design. As computer use increases, the application of ergonomics in risk avoidance becomes critical. The study examines the ergonomic problems and physical symptoms experienced by library staff who make use of ICT resources in carrying out their daily routine, as well as the ergonomic measures put in place for the library staff of two universities.

Significance of the Study

The library and library staff are crucial to the support of the mission and vision of any academic institution. Nardi, O'Day, and Valauskas (1996) say that, "librarians are more than technicians. They are, it seems information therapists who analyze problems as well as find answers." Valauskas (1997) observes that librarians are becoming more important in this information-centric universe. Librarians are already fulfilling new roles as content providers, search strategists, digital cataloguers, and information mechanics. Responses to a questionnaire sent out by Steinhagen and Mueller (1992) to heads of cataloguing in 185 medium-sized academic libraries in the US suggested that, although cataloguers spent more time at computers than they had previously, offline tasks still exist, and that ergonomic furniture, other than pneumatically adjustable chairs, was not widely available.

Bade (2008) uncovers valuable literature on failure in organizations and technical systems, which is the literature of ergonomics. He makes the case that ergonomics are crucial to the implementation and use of technology. The findings of this study will raise awareness of ergonomic problems and give the administration of academic libraries the knowledge to be proactive in the formation of staff safety policies, acquisition of library infrastructure, and procurement of ICT resources for their libraries.

Scope of the Study

The university libraries selected for this study were purposively chosen based on their level of computerization. One of the universities is a federal university, the University of Lagos (Unilag), while the second is a private university; Covenant University (CU).

The Unilag Library has a total of 57 staff, ranging from administrative staff and library assistants to the university librarian. The library is highly computerized and has a standby generator in case of electric power failure. The library in Covenant University is known as Centre for Learning Resources (CLR), and has fully computerized all routine activities. It can boast of a functional virtual library service, which gives staff and students access to the Online Public Access Catalogue (OPAC) and other electronic resources from offices, departments, and wherever there is a computer terminal that is linked to the university network. CLR also has a standby generator to augment the supply of electricity.

Methodology

The target population for this study are the staff of two university libraries, Unilag and CU. Copies of a questionnaire were distributed to the staff of the two university libraries. The population sample was made up of all library staff who make use of a computer and other ICT related resources, and who spend long hours carrying out their daily responsibilities. These include librarians, library officers, systems engineers, and secretaries.

Findings and Analysis

Table 1: Sample Frame

University Libraries	Total No. of Staff	No. of Respondents
Unilag	57	43
CU	37	30
TOTAL	94	73

Ninety-four copies of the questionnaires were sent out, with 73 duly completed and returned, which represents a 77.7 percent response rate.

Table 2: Distribution of Respondents According to University Affiliation

University affiliation	Frequency distributed	percent distributed	Frequency retrieved	percent retrieved
CU	37	44	30	81
Unilag	47	56	43	91
Total	84	100	73	100

On the whole, 87 percent of the questionnaire forms were duly completed and used for the analyses.

Table 3: Likely causes of ergonomic problems

Likely causes of ergonomic problems	CU		Unilag	
	N	percent	N	percent
Awkward posture	25	83	39	91
Frequent repetitive motion tasks	19	63	29	67
Stress at workforce	28	93	41	95
Vibrations	11	37	18	42
Forceful movements	19	63	35	81
Poor workplace setup	27	90	38	88
Sitting in the same position for continuous long hours	25	83	36	84
Lower back support is inadequate	21	70	32	74
Exposure to computer screens on a regular basis without protectors	27	90	39	91
Standing for long periods	24	80	37	86
Poorly designed seats	29	97	39	91

The most prevalent problems are poorly-designed seats (97 percent, CU; 91 percent, Unilag), stress at workforce (93 percent, CU; 95 percent, Unilag), awkward posture (91 percent, Unilag), and exposure to computer screens on a regular basis without protectors (90 percent, CU; 91 percent, Unilag).

Table 4: Symptoms or characteristics of ergonomic problems experienced

Ergonomics Symptoms	CU		Unilag	
	N	percent	N	percent
Pain in wrist, forearm, elbow, neck or back followed by discomfort	28	93	37	86
Aching or tingly	22	73	32	74
Dry, itching or sore eyes	9	30	11	26
Cramping	8	27	19	44
Numbness or a burning sensation in the hand	7	23	14	33
Reduced grip strength in the hand	9	30	14	33
Weakness	20	67	29	67
Tension, stress, headaches and related ailments	27	90	38	88

Table 4 highlights physical symptoms caused by poor ergonomics. Respondents from both institutions chose tension, stress, headaches, and related ailments, and pain in wrist, forearm, elbow, neck, or back, followed by discomfort as the two most visible ergonomic symptoms.

Table 5: Ergonomic measures in libraries

Ergonomic Measures In Your Library	CU		Unilag	
	N	percent	N	percent
Compulsory one hour break	21	70	29	67
A recreation and relaxation centre	25	83	8	19
Body massaging devices are provided	-	-	4	9
Provision of adjustable furniture	22	73	25	58
Provision of computer monitor protectors	14	47	29	67
Provision of trolleys and elevators	29	97	27	63
Effective workstation design, space planning, appropriate furniture specification	26	87	24	56

The most common ergonomic measures are trolleys and elevators, a compulsory one hour break, and computer monitor protectors.

Conclusion and Recommendations

Respondents from both institutions are faced with a variety of ergonomic problems that have led to tension, stress, headaches, and other pain. Preventive measures are primarily provision of trolleys and elevators, compulsory breaks, and computer monitor protectors. There are many obvious benefits to applying ergonomics in the workplace. For the worker, the benefits are healthier and safer working conditions. For the employer, the most obvious benefit is increased productivity.

Sitting all day is injurious to the body, especially to the back. Library staff sit for long hours. The sedentary nature of their job calls for caution. There should be some variety in the tasks performed. A good chair is essential for seated work. The chair should allow the worker to change leg and general working positions easily.

Lifting and carrying are always strenuous. Libraries should have elevators to convey library materials from one location to the other. The workers who will be affected by ergonomic changes must be involved in discussions before changes are implemented. Their input can help determine necessary and appropriate changes. The goal of ergonomics is to look for ways to make the job fit the worker, instead of forcing the worker to conform to the job.

Proper positioning of computers is crucial to prevent pain and injury. Make sure computers are situated directly in front of workers as to avoid uncomfortable positions. Place computers perpendicular to light sources and consider buying screen protectors to cut down on glare.

Nigerian library schools should integrate ergonomic issues into their curriculum. The formal teaching of this concept would help sensitize library practitioners to emerging global standards. Early intervention is the key to preventing long term incapacitation. General workstation ergonomic instructions should be documented and circulated among staff. Good ergonomic assessment and design can ensure library efficiency and increased productivity.

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