

SOCIAL CHALLENGES AND SOCIETAL IMPLICATIONS OF HUMAN-COMPUTER INTERACTION (HCI) IN RESEARCH AND DEVELOPMENT

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ABSTRACT

Computer and other high Technology (CHT) have come a long way in revolutionizing the world where humans duel from generation to generation, usage of the computer High Tech vary though but the impact of the Human-Computer Interaction (HCI) amongst users around the globe is questionable. Therefore, in this paper, we examine the radical social challenges of Human-Computer Interaction (HCI) amongst some array of users of these innovations on research and development (R & D).

Introduction

The Computer

The computer as seen by (Aghware 1998), is an electronic tool that can be programmed to accept input, store the input, process it to relevant result and release the information attained for planning. It has been so revolutionized and many opportune users all over the globe have embraced it as a means of interaction for one basic reason or the other.

Human-Computer Interaction

Human-Computer Interaction (HCI) has been defined in many different ways - as a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them, (Hewett et al., 1992); and as a study that concerns designing computer systems that support people so that they can carry out

their activities productively and safely (Preece et al., 1994). Interaction design is "designing interactive products to support people in their everyday and working lives." (Preece et al., 2002). Realizing the importance of contexts in the interaction between humans and technologies, Zhang and colleagues defined Human-Computer Interaction, especially human factors in IS, as the ways humans interact with information, technologies, and tasks within various contexts (Zhang et al., 2002). This last definition emphasizes the point that HCI issues and concerns involve all possible interactions between a user and a system during its lifecycle, including the development stage, use in context, and the impact of such use on individuals, organizations, society, and future systems development. We henceforth use this last definition for our further discussions in this paper.

Human-Computer Interaction And Accessibility

Most researchers use computers for their studies and with inaccessibility it becomes difficult to conduct a research. Most of the computing tools are composed of features which the visually impaired and the hearing impaired individuals cannot use easily. For instance, video clips without captions area challenge to the hearing impaired individuals while web pages which are incompatible with text browsers and screen readers area challenge to the visually impaired individuals (United Nations, 2006). These features lock out the disabled people from accessing the required information. In research and development, this can be a setback since disabled researchers are hindered from conducting their studies effectively and efficiently.

Furthermore, in 2001, the Rehabilitation Act for the disabled people was approved and became law. This requirement, although has been accepted and used for several years, it has become a challenge to human-computer interaction (HCI) developers (Jacko & Sears, 2003). To some extent it restricts their innovations since they are required to ensure that their designs meet the requirements. Additionally, studies conducted by Kane and Yuschik (1987) have shown that new systems needs to be designed and the issues concerning the needs of users with disabilities needs to be explored further. This is an implication that more research needs to be done on accessible user interfaces that ensure the needs of people with visual, cognitive, hearing and muscular disabilities are met.

Additionally, some user interfaces are inaccessible to older users and this can be a setback in terms of research and development since they cannot conduct their studies efficiently. According to studies conducted older users have been experiencing problems in getting information from websites and in addition to that multiple browser windows are difficult for them to use (Meyer, Mead, Spaulding, Sit & Walker, 1997; Ellis & Kurniawan, 2000) Similarly, the older adult users find it difficult to utilize pointing devices and thus accessibility of information becomes difficult in some cases (Worden, Walker, Hudson & Bharat, 1997). Although some web interfaces for older adults have been designed using automated site analysis tools (Becker & Nowak, 2003) and usability guidelines (National institute on Aging, 2002), some of them are not and thus area problem for the older users. In addition to that the computers are becoming more sophisticated with time as the number of user needs increase and this therefore leads to the neglect of the older users. This therefore implies that more research needs to be done in ensuring the needs of older people are

met. Researchers need to design interfaces which older users can use without many difficulties as older people are essential for research and development.

Most researchers have been putting more effort in ensuring that the children's computing tools are improved and that children can learn with much ease. For instance, Papert (1993) conducted some studies and was able to create the Logo language to help children in learning programming languages. Similarly, some researchers have focused their work in creating new applications for the children, such as the applications for collaborative drawing (Steward, Bederson, & Druin, 1999) and for storytelling (Benford et al., 2000). To add to that, others have focused on designing input devices (Inkpen, Booth & Klawe, 2001) and screen interfaces (Sullivan, Norris, Peet, & Soloway, 2000). However, in spite of all the efforts put by developers in enhancing children learning, the needs of the children are not considered in the designs. In most of the educational tools the teachers are the end users and not the children thereby providing them with limited time and accessibility. The children computing tools are designed in a way that children cannot access them without assistance from their teachers or guardian. Researchers need to consider the children's needs when designing their educational tools. User interfaces meant for the children need to be accessible to the children.

Moreover, researchers need to do more exploration before designing user interfaces in order to ensure that their designs meet the needs of most users. Individuals from different cultures have different needs which are guided by their cultural traditions. The user interfaces therefore need to be carefully designed and evaluated with regards to the language, cultural sensitivity, colors and visual depictions (Nielsen, 1990).

Human-Computer Interaction And Privacy

Although researchers have focused the work more in ensuring that privacy is maintained, in some cases users' privacy has not been protected. For instance, installation of spyware in computers is an infringement to user privacy. Spyware monitors the behavior of the users without the user's consent and in addition to that it collects private information concerning the user (Search security, 2009). However, balancing user needs and privacy can be a difficult task for the HCI developers and thus more research needs to be conducted to ensure that user interfaces designed meet user needs and at the same time assure privacy of information.

Conclusion/Recommendations

Human-Computer Interaction is essential and very relevant for research and development and therefore more research needs to be done to ensure that the needs of all users are met adequately. Although the HCI developers maybe facing huge challenges/limitations which are related to Rehabilitation Act, funding, among others, they need to become more innovative and creative hence design interfaces which meet the needs of most users. These challenges should become a motivation and not a setback in their work, thus, they should therefore focus more on improving HCI.

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