

“Him and Her” - Gender differentials in ICT uptake: A critical literature review and research agenda

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ABSTRACT

Observed gender differences in the use of Information Communication Technology (ICT) constitute a form of digital divide. Differences between male and female ICT users are of increasing interest world wide as the digital divide evolves. This gendered digital divide is more prominent in the developing world and Africa provides a very obvious illustration. The result is an inequitable distribution of benefits that come with the use of ICT. The objective of this paper is to review literature on the gendered digital divide. This paper draws on arguments advanced in feminist standpoint theory and gender symbolism to consider how gender symbolism contributes to a better understanding of differences in ICT use in University education. This includes how understandings and experiences of ICT, influence the decision to use / not use ICT.

Keywords: *Gender and ICT use; Gendered Digital Divide; university education and ICT; Gender Symbolism; Feminist Stand point Theory*

INTRODUCTION

Information and Communication Technologies (ICTs), are increasingly accepted and integrated in teaching, learning and research activities in universities, both internationally and locally (Ouma 2003; Agbonlahor 2005). The choice to integrate ICTs is driven by the potential and actual benefits that accrue from the use of ICT, such as expanded access to education and improved educational quality if students are put at the centre of an engaging and active learning process (Takiya, Archbold et al. 2005). Use of ICTs can offer a rich choice of learning experiences that are appropriate to needs, space, pace, aspirations and learning styles (Flood 2002). Learning and training could become interactive in contrast to the one way delivery system of traditional face to face teaching. It even promotes self learning skills (Deryn 2004; Mugimu 2006). At the level of the whole system ICTs can be used to provide consistent, worldwide training, reduced delivery cycle time, and improved access to information resources and education (Gregorian 2002; Huyer and Sikoska 2003; Mulyampiti and Kasozi 2004; Anene and Musubuka 2005).

The use of ICTs could also have negative consequences such as students becoming distracted by pursuits such as illegal downloading of music and movies and use of online pornography. There are also environmental hazards that emanate from disposing of obsolete computers (Morahan-Martin 2000; Roberts 2007).

Despite these risks the benefits of ICTs are innumerable (Hawkins 2002; Takiya, Archbold et al. 2005) Because ICT has such powerful effects on our lives, it no longer makes sense to compare the risks and benefits. Morahan-Martin (2000) stated that “Dichotomous arguments do not do justice to our understanding of how the use of ICT-computer and the Internet impacts on our lives. In fact the question is no longer whether or not to use ICTs.

Africa is still grappling with attaining full development and economic growth. Perhaps the new

technologies can be used in education to attain the millennium goal of education for all and to develop the highly productive human resources needed for full economic growth. While the rest of the world is enjoying the fruits from the “digital / computer generation” (Morahan-Martin 2000), Africa does not yet have one. As stated by Christine Hemrick, Cisco president, there is an urgent need to get women particularly involved in the use of ICTs both as literate users and as professionals. This challenge applies to institution and nations as well as to students as individuals (Huyer 2003; Huyer and Sikoska 2003). Those who don't use ICTs are at a disadvantage economically, socially, politically and educationally (Morahan-Martin, 2000).

GENDER DIFFERENCES IN ACCESS AND USE

Most of the literature on gender and ICT considers access by women to ICT. This includes concerns about infrastructure, training, local content and women in rural or underserved areas. Although existing information is scattered and fragmented, a review of the available existing literature from different parts of the world has revealed that there are clear gender differences in access and use of ICT (Morahan-Martin 2000; Hafkin and Taggart 2001; Agbonlahor 2005; Brous 2005; Nsibirano 2006; Madanda, Kabonesa et al. 2007 (Stewart, 2004)). Yet, to be in a position to benefit from the era of ICT, such as computer supported learning, both access and use of ICT are vital (Agbonlahor 2005; Tinio 2008). The problem however is the gendered digital divide (DD) as manifest in observed gender disparities in access as well as in use (Morahan-Martin 2000; Brous 2005; Etta and Elder 2005; Ojo 2005).

The digital divide interpretation is contentious. Some scholars think the digital divide is complex, tricky, widening, dynamic and becoming deeper (Dijk 2000; Sassen 2006). Other scholars feel it is narrowing as more divides are created (Dijk 2000; Liff and Shepherd 2004). Yet some writers deny its existence all together (Dijk 2000) or believe that the digital divide will disappear on its own (Dijk & Hacker, 2003). I find it difficult to believe this view which implies the futility of action to address the gendered differences in access to ICTs.

There is a gendered digital divide in university education both internationally and locally since girls and women have far lower levels of ICT access and use than their male counterparts. This has been in part a result of a long standing male dominated science and technology culture and of biased socialization processes that stereotype female and male potential and capacity for ICT. As a result women are discouraged from choosing and maintaining their participation not only in science related courses and professions but also technological courses. While the magnitude of this divide varies it exists globally including in the United States of America.

Morahan-Martin, 2000 notes that “...females have reached parity with males in having used the internet which often leads to the assertion that the digital divide has disappeared. This is partially true because ... men continue to outnumber women.... This goes hand in hand with the fact that even the purposes for which males and females use ICT for and the sophistication with which they do it also varies. Margolis and Fisher (2002) noted that young women had to struggle to maintain their own confidence and interest. Males exhibit a high level of interest in ICTs even when their competency levels are similar to those of females (Morahan-Martin 2000; Lee 2003). Many of the few women, who find themselves in Information Technology related fields, move out, creating the “leaking pipe concept” This exodus of female scientists leads to a decline in female participation ratios which fell from 37% in 1984 to 28% in 2000, in the U.S.A (Derbyshire 2003). In the University of Limerick, Ireland and University of Hong Kong a ratio of 56 males: 44 females are quoted in the Computer Science course Culture is another factor that has been documented to contribute to differences in access as well as use of ICTs.

The infrastructure and human development conditions underlying ICT use are far worse in Africa than in the developed countries. There are far more users per computer, much lower bandwidth, slower

connection speeds, unreliable electricity supply and higher illiteracy rates. However, on the whole, the males are still in a better position regarding access and use of ICT (Agbonlahor 2005). In both Nigeria (Agbonlahor 2005) and Uganda (Nsibirano 2006; Madanda, Kabonesa et al. 2007), women, constitute a minority of Internet users. The fact that use of Internet is still limited to a small elite, mostly male, urban population with high income levels does not improve this picture. In Makerere University, a study done by ICT consultants (2005) found that the ratio of male to female students in the ICT programs is 3: 1. This disparity is consistent with results from other African universities. (Rathgeber 2000; Agbonlahor 2005; Nsibirano 2006). The gendered digital divide in African universities is highly undesirable. If women experience marginalization and exclusion in ICT led education then projects which promote ICT integration in university education will be ineffective and wasteful of resources. The need to improve the use of ICTs in universities then underlines the need to understand and to remedy existing gender disparities.

THEORETICAL DEBATES

This short literature review of gender and ICT draws on feminist standpoint theory and gender symbolism to explain gender disparities in the use of ICT. From this perspective the gendered creation and assignment of meaning and value about ICT results in gender differences in ICT use.

Understanding gender and ICT is still a challenge because of several perspectives and approaches. Three perspectives and two approaches have been identified. The first perspective as discussed by Harding, (1987) takes gender as a variable. In this women are seen as a homogenous category. Studies that take on this perspective simply compare and contrast women and men in terms of important yet crude indicators such as the number and percentages of men and women who access ICT. This provides very useful information which is often missing from national statistical data as indicated by Hafkin, 2006. However this is not the focus of particular review.

The second perspective, on the other hand, the post- structuralist /post- modern feminist perspective stresses that "woman" is not universal. This perspective emphasizes that variations are created with context. Thus women are understood as individuals not as groups. The strength with this perspective therefore is that it gives individual women a voice, and its focus is context and target specific. The third perspective known as feminist standpoint theory stresses the importance of women's' situation and shared experiences regarding the widespread oppression and devaluation of women as central features of society and its institutions. This perspective embraces a qualitative research methodology basing on personal experiences to provide critical insights (Haraway 1991; Harding 1991; Morgan, Heeks et al. 2004; Sandra 2004). This paper adopts feminist standpoint theory to explain differences in ICT use because it offers an opportunity to critically explain gender differences within the context specific experiences of the ICT users.

In turning to the approaches to understanding gender and ICT we need to consider both the women and technology approach and the gender in technology approach. Women in technology as discussed by Henwood, 1993 in (Morgan, Heeks et al. 2004) takes technology as having a gender-neutral effect on the users. This implies that regardless of ones gender, the outcomes deriving from the application of ICT are identical. Thus the required strategy is to simply increase the number of women using technology. This proposed solution unfortunately disregards other factors which obstruct the participation of women in technology. As some scholars have put it, technology is social. Therefore, differences between men and women do exist, and can be seen in their respective experiences in society (Morahan-Martin 2000). Looking at men and women as if they are identical does not bring us to an accurate and useful analysis of ICT in society.

On the other hand the gender and technology approach shifts focus to the technology and gender relations in society (Cockburn 1985). This approach together with the feminist standpoint perspective guides my present review of literature on gender and ICT. In society, ICT usage is experienced differently by male and females. These experiences have a bearing on the outcomes of the different technological

relationships.

Thus our efforts to analyse and explain gender differences in ICT uptake will fail unless we come to terms with the different experiences of men and women and the specific contexts underlying these experiences. The gender and technology approach leads directly to the issue of meanings and values as they are created, defined and eventually attached to the use of ICT. (I suspect that the processes of meaning and value creation, definition and assignment could also be gendered.) This approach has been missing, to the best of my knowledge from the existing literature on gendered ICT use in Africa.

Standpoint Feminism

Feminist Standpoint theory is a feminist epistemological theory. It has been of interest to scholars who wish to give voice to the voiceless since it is a knowledge creation stand that aims at empowering the marginalized. From this we learn that all individual experiences are significant and if understood contribute to an understanding of the disparities existing between males and females. The central tenet of feminist epistemology is “situatedness of the knower and hence “situated knowledge” (Harding, 1991). What situatedness points to is the assertion that all users have a stand that is dependent on their differences of experience, values, assumptions goals and prejudices (Haraway 1991; Harding 1991; Cockburn and Ormrod 1993; Charles and Hughes-Freeland 1996; Morgan, Heeks et al. 2004; Holst 2005; Widerberg 2005).

Standpoint theory takes clear account of how knowers experience and respond to power in society. From this perspective Haraway, 1991 states that “the other” is the normative- critical concept, according to which the marginal views from non- privileged positions offer better vantage points for knowing the world than those from the centre (Charles and Hughes-Freeland 1996). Thus situated knowledge is “objective” and conscious but it is not innocent Haraway, (1991).

In this review I wish to suggest the significance of involving users in the efforts to understand their relationships with technology including ICT. Such an analysis requires a clear focus on the users (in this case university students), as situated knowers (Harding 1986; Haraway 1991; Harding 1991; Sandra 2004; Engelstad and Gerrard 2005). This will assist in the attempt to understand gendered differences in the use of ICT. The students will have an opportunity to contribute to knowledge concerning computer and internet uptake in university education. Students have a wealth of untapped knowledge basing on their experiences with computer and internet use (Wood 2005). It is the individual student’s standpoint in a university society; that will shape an understanding of issues about gender symbolism and ICT uptake. It is also possible to interrogate students’ social and demographic differences and how they influence different experiences in the relation to technology use.

This further point to the fact that the view of the students as “situated knowers” is not innocent. Rather it has been created out of the different individual experiences. At this point, it is not clear what the role of students has been in the processes of ICT integration in University education, not only in Makerere University but the whole of Africa as a whole. From this literature review, it is clear that the view of the users, in this case the student user is missing. However it is in the interests of all stakeholders in the drive to integrate ICT in University education that we draw on contributions from students viewpoints as situated knowers so that we can begin to understand issues of ICT uptake by students.

Standpoint theory is further useful in that it allows for in-depth interviews that are stimulating, inspiring and hence lead to better knowledge production (Engelstad and Gerrard 2005). Situated knowledge is unique, less distorted and may offer both perspectives, i.e. that of the insiders/dominant and the outsiders/less dominant (Wood 2005). In this case the students who are the outsiders might offer a better appreciation of issues influencing ICT uptake in Universities. This suggests a particular need to take account of the standpoints of students both males and females as the outsiders as opposed to the administrative and academic staff who in this study are the insiders. Although female students are marginal compared to their male counterparts, standpoint allows for the views from non-privileged

positions regardless of level to be obtained.

Thus within the students level, the position of females vis a vie that of males students, who are in positions of relatively privileged access to resources will and should be interrogated as they are unlikely to have similar experiences (Corneliussen 2005).

Gender Symbolism (GS)

Gender Symbolism starts with the perspective of scholars like Herbert Mead (1863- 1931) and others (Haralambos and Holborn 2000; Connell 2002; Heath 2003) who have commented that humans are symbol using beings. For all the symbols that are known to them, humans have a tendency to assign meanings to each one of them. The "gender" in the gender symbolism is simply to appreciate the fact the men and women have differences in the way they define and assign meanings to these symbols. Cirlot, 1985 (in (Gherardi 1995) explained the principals of the symbolism further that there is nothing that does not matter. Everything expresses something and everything is meaningful. That no form of reality is independent: everything stands in relation to something else. In other words, every thing has got a meaning.

Therefore, GS refers to how gendered meaning and value are assigned to everything in the world, but in this case to computers and the Internet. It is from the different positions and perspectives that each user holds that meanings are defined and assigned. Differences in experiences based on the positions held usually tend to create differences in meaning. With each perspective, individuals' create meaning and this is the process of Gender symbolism. Gender symbolism and standpoint theory are related in the sense that meanings are derived from the experiences of a situation. Administrators in a university community for example will define different meanings to the use of ICT from those assigned by students.

Therefore, in seeking to understand the differences between Him and Her in ICT uptake, in universities, a review of Sandra Harding's' theory of Gender symbolism (GS) (Harding 1986; Cockburn and Ormrod 1993) is helpful. An analysis of meaning, builds an understanding of the differences that abound in the use of ICT. Clear understanding of what meanings exist and how they are defined and attached to the use of ICT is still missing. It is not for example clear how males and females create and assign meaning to the use of ICTs in Universities. This knowledge gap, it is hoped will be enriched with the forthcoming research that will be done to interrogate the influence of gender Symbolism on ICT uptake in Universities in Uganda. It is hoped that findings of the proposed research will yield a satisfactory explanation of the gendered disparities in uptake of computers and the internet facilities much better. This inquiry has not been made before in a university setting using computers and the internet.

RESEARCH DESIGN

This will be a cross sectional study which entails the collection of data on more than one case at a single point in time, in connection with more than two variables, which are then examined to detect patterns of association (Bryman 2001; McIntyre 2005). Data collection methods will be triangulated through the use of interviews, focus group discussions, observations and document reviews, to examine the interaction of students with ICT. Some of the data collection will focus on disparities in the creation and definition of values and meanings associated with ICT. Further, issues about appreciation and uptake of ICT facilities by students will be studied at a particular time and across a section of respondents. The study will employ a primarily qualitative strategy. However, some quantitative data will be collected and analyzed in order to combine the strengths and compensate for the weaknesses of qualitative and quantitative analysis (Bryman 2001).

Study Area

Uganda has four public and thirteen private universities (NCHE 2007). Due to limited time and resources, one public and one private university have been purposively selected for the study.

Makerere University (MAK) and Uganda Christian University, Mukono (UCU) have been selected because of the presence of ICTs for teaching, learning and research in both institutions.

Population, Sample size and Selection

Undergraduate students in different years of study will be the main unit of analysis. However, postgraduate students, administrators, instructors and service providers from Makerere and Uganda Christian University will be studied. This will be done so as to understand ICT uptake within the bigger university context. As stated by Neuman (2003), "meaning develops within a set of other meanings, not in a vacuum" (Neuman 2006). The chosen sampling strategy attempts to study, observe and question only those persons that will provide the necessary data (Miles and Huberman 1994; Neuman 2006). While quantitative researchers look out for a representative sample to attain generalizability, qualitative researchers focus less on a sample's representativeness and more on its illumination of social life (Neuman 2006).

Therefore, a total of two hundred and forty (240) participants will constitute the study population. That is; 120 undergraduate students, sixty from each of the two universities-30 male and 30 female, who will be purposively selected to be treated to a semi structured questionnaire. Participants will be identified based on their study of non ICT based courses and their willingness to be part of the study. A total of 20 students; 5 male and 5 female from MAK and UCC will be purposively selected from second year undergraduate students, to represent cases from the ICT preference Units (ICTPU). As argued by Stake a researcher should "choose that case from which we feel we can learn the most" (Denzin and Yvonna S 2005) From this section of students the researcher will learn specific and unique meanings that they have which might be different from the meanings of students from non ICT practicing units. Their availability, accessibility and willingness to be part of the study will be considered. In addition, their history of training in ICT skills, knowledge about the university and their course will be considered. This category will be necessary to understand how differently access of ICT infrastructure might influence uptake as opposed to meaning and value definition. Twenty key informants will be selected for in-depth interviews, five male and five female from each of the two universities, to include administrators and instructors in ICTPU, lecturers and service providers. In addition, forty (40) key informants, twenty from each university will be identified from the undergraduate students and forty (40) postgraduate students, twenty from each university.

CONCLUSION

In summary this review and research agenda is an attempt to contribute to a better understanding and offer explanation to the existing gender disparities in ICT uptake in universities. Many studies have shown that males and females differ in both access to and use of ICTs. Up until now at least to the best of my knowledge, there has been no satisfactory attempt to explain why the observed differences between female and male students exist. In working from the feminist standpoint theory of the situatedness of the knower- student user and gender symbolism theory, the author anticipates a clear demonstration of the importance of meaning in determining the decision or choice to use or not to use the "available" ICTs in a university setting.

Without a clear understanding of student perspectives on use of computers and the internet, the meaning formation process and its influence on uptake it is likely that attempts to integrate of ICTs in the teaching, learning and research activities of the universities globally and Uganda in particular will be a waste of time and resources. A better understanding of students meanings, most especially as born out of their own situated experience with ICT is a perspective still missing from the puzzle. This is called for as it reveals a point of view that is different from that of other players in the University as well as a standpoint from the beneficiaries of the move to promote ICT.

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