A Review of the Interaction of Gender with Information and Communication Technology in Nigeria

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This paper carried out a review of the interaction of gender with Information and Communication Technology (ICT) using Nigeria as a case study. Interaction of gender with ICT cannot be over-emphasized especially since research showed a need for balance and understanding of the roles and the immense contributions of ICT for instructional purpose. The study also explored the conceptual meaning of gender as it relates to the study, the importance of information and communication technology especially for effective instruction and the distinction between men and women's use of ICT. It was recommended that gender should not be used to discriminate against females in science and technology and in ICT in particular; females should be given opportunities like their male counterparts to attend and participate in ICT conferences, trainings, workshops, etc. at their convenience because of their peculiar situations.

Keywords: information and communication technology, gender, interaction

The world comprises of males and females as both sexes contribute their quota to national development. In every sector of the world economy such as banking, telecommunication, education and health, the presence of both sexes is registered as one that is indispensable of the other. Internet as a subset of information and communication technology (ICT) has been found to be invading educational sector, banking, telecommunication, health and so on in Nigeria and other countries in ways unparalleled. This is because it allows for experimentation, useful for conceptualizing and problem solving (Onasanya, 1999).

The use of ICT and the computers provides an ideal environment for research and for instructional media design because the teachers can optimize their advantages and students also can study, design and learn with almost as much rigor as carefully controlled classroom conditions, coupled with meaningful realism of actual classroom learning (Eshiet, 2009). This is why this study seeks to review the interaction of gender with ICT in the teaching and learning processes.

Definition of Gender

Gender is a social attribute and opportunity associated with being a male and a female and the mutual relationship that exists between them. These attributes and relationships are socially constructed and are learned through socialization processes, while technology development serves as a forum for exploring the linkage between changing gender relations and technological development (Ewhrudjakpor, 2006). Gender in global and technological perspectives, is no longer a significant impediment for performance, relevance and societal acceptability especially in the developed countries (Esiobu, 2011). The African value placed on gender is also gradually fading and giving way to the global view (Adegbija, 2006). The adage which says "what a male can do, a female could even do better" is being realized through the use of ICT.

Importance of Information and Communication Technology (ICT)

Adegbija and Daramola (2007), described ICT as the handling, processing, storage, retrieval and dissemination of information via electronic devices. Electronic devices in this content can be television, radio, computers, the Internet, devices that use projectors and many other gadgets used for teaching and learning. Therefore ICT can be seen as a combination of several electronic devices involved in the recording, processing, storage, and transmission of information in various forms among human beings. Osunrinde (2002) also asserted that through ICT the world which has become a "global village" with rapid interaction and response effects, is fast becoming a "global room" to "zero space".

There are myriads of application of information and communication technology (ICT) that directly or indirectly affect every human development and existence. Essentially, a computer connected to the Internet is a veritable between the user and the global ocean of information which are essential for research. With the rapid development in video conferencing, it is now possible for a lecturer in one continent to give lectures on-line to students in other regions. On-line interaction via high speed media makes it possible to shrink the world into a classroom and enable one

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or two way communication without actually travelling to a common site (Adegbija, 2006).

Information and communication technology provides an avenue for optional utilization of human resources in the educational and industrial sectors. In the same way, expertise can be shared among the universities, polytechnics, research institutes, and a host of others through ICT. Also, through Internet connectivity, medical students can learn on-line sophisticated surgical operations carried out by specialists in advanced countries such as the USA, Germany, Europe, and others. Osunrinde (2002) explained that, as an extension of tele-education, ICT has made it possible for localized laboratories to be shared globally over the Internet. For example, rather than duplicating expensive research equipment, a single line can be shared among institutions by pre-determined sensors and computers in the sharing institutions and connected via Internet to the laboratory hosting the equipment.

Babarinde (2001) was of the opinion that, many medical doctors are unwilling to come back to Nigeria (this may be a common practice in other developing countries or Africa) because of lack of necessary equipment and enabling environment; as such, their expertise is lost to their people where they are mostly needed. Presently, in Nigeria some aspects of health care can be provided through tele-diagnosis, tele-description, tele-treatment and so on. In essence, dissemination of appropriate information and counseling on public health and hygiene are now beginning to be delivered through the application of ICT techniques, such as point-to-multi point, large bandwidth wireless, video conferencing between various researchers in cities and rural settings, thereby improving quality of life in a remarkable fashion. Also, Internet resources have made tremendous contributions to the development of education in Nigeria. For instance, the Internet has made the introduction of virtual learning in Nigeria possible. According to Abimbade, Aremu and Adedoja (2003), with access to Internet, students can use the electronic mail (e-mail) and world-wide-web (www) in distance learning.

Furthermore, ICT provides both males and females the avenue for social learning. For instance, Olasunkanmi (2010) worked on social networking as a collaborative tool for distance learning students and found that the collaborative tool developed higher level of thinking skills that enhanced learning satisfaction and social interaction skills for both male and female students. By 2012, all these ICT developments should have been well established, but many developmental programs go through retrogressive experiences in most developing countries. This explains why research in this area is still as relevant as it was at least a decade ago.

Gender use of ICT: examples from some developed countries

Some researchers have indicated a clear distinction between male and female use of ICT as related to the Internet, the Web or the use of the computers but most showed no significant differences. Livingstone and Helsper (2007) undertook to explore gender differences in use of ICT. The findings revealed no significant difference between nine to fifteen years old girls and boys. However, the findings further revealed that adolescent boys make extensive use of the Internet. The results also suggested that it is the number of opportunities available to grown up boys that determine gender differences in frequency of internet use. Moreover, the use of the participatory web also shows variations among boys and girls. For instance, while teenage girls tend to be more avid bloggers, boys are more likely to upload videos (Lenhart, Madden, Rankin & Smith, 2007). In a similar study carried out by Chen (2007) no gender differences were found among college students in social network site use, though boys were more likely to utilize video-sharing applications than girls. Furthermore, Hargittai and Walejko (2008) reported that girls were found to be less likely to share on-line content such as, photos, videos, and texts than boys.

Inexperience in Internet for female users has been cited as an important factor in determining their attitude and anxieties towards its usage (Tenson, 1999). Some studies carried out have found gender disparity in Internet achievement in favor of males (Ajunwa, 2004). Others such as Nwosu (1991) and Madu, (2004) found none.

Tondeur, Valcke, and Braak (2008) explored gender differences in use of ICT by primary school teachers in Belgium. Their findings revealed mild differences between male and female teachers. These researchers found that male teachers make slightly higher use of ICT than female teachers. Contrary to that Kenne, Well and Morgan (2006) found little gender difference in curricular ICT use. However, they emphasized the importance of play for effective learning for both boys and girls across a wide variety of age levels. Similarly, another study was conducted by Papastergiou (2009) in Greece on high school girls and boys. The results revealed no significant difference between boys and girls in the level of their motivation for curricular games designed to teach computer related concepts. Vekiri and Chronaki (2008) conducted a survey of elementary school children in Greece. The data collected from more than 300 children demonstrated that attitudes of children toward ICT in schools were largely determined by technological conditions in their homes. It was further highlighted that Greek boys use computers more frequently and with greater parental support than do girls, and that such support is related differentially to their respective perceptions of self-efficacy.

Chandra and Lloyd, (2008) compared test results in level-10 science learning in Australia, and found differences among sub-groups undergoing traditional classroom teaching versus a blended classroom/e-learning setting. Boys and girls were divided into different cohorts and then further broken down into performance quartiles. The findings demonstrated that boys in the lowest quartile seemed to benefit the most from the blended setting; performance of the girls in the top quartile actually fell. Hence, gender differences in ICT usage and literacy are inconclusive even in the developed countries. This means that the gaps and differences earlier reported in gender use of ICT are closing up in most

developed countries, which is not really a negative trend. It however, shows that most researches on ICT are inconclusive and require further researches especially for developing countries.

In Nigeria, and in most of the developing countries, interaction of gender with ICT is still an issue for researchers because development in science and technology is still regarded as specifically more suitable for males. Thus, there is still low admission into such areas that require serious science and technological skills. However, since researchers are working towards bringing more awareness and action plans for all stakeholders, it is evident from the global trend that the developing countries especially Nigeria will in no distance time produce female scientists and technologists.

Reasons why females are at a disadvantage with ICT use

In Nigeria, the acute shortage in number of females that gain access to scientific and technological training is significantly low. As a result, the higher achievement experienced by males may be due to more opportunities given to them in science and technology as compared to those given to females. Similarly, Adegbija (2006), opined that women are restricted from participating in a number of activities meant for men, especially those involved in 'physical prowess' because women are seen as the weaker vessels. In addition, other researchers such as Esiobu (2011), Alkali (2011) opined that gender bias should not be used to prevent any particular sex from benefiting and contributing to national and technological developments of any nation.

Furthermore, it has been observed that females in Nigeria still tend to have less access to ICT facilities than their male counterparts. Frequently, rural ICT centers or cybercafés are located in places that females may not be comfortable with or that are not readily accessible to them. Since most ICT facilities in rural areas share public access, females also have the problem of time and especially since many communities in Nigeria still place restrictions on females' movement. In addition, given multiple roles and heavy domestic responsibilities, few leisure hours, the cybercafés may not be opened when most females can visit them and return safely to their homes. Their mobility (both in the sense of access to transportation and ability to leave their home) is also more limited than men (Adegbija, 2006).

Some researchers argue that socio-demographic characteristics of users are important predictors of access and use of the Internet. Novice Internet users may face psychological barriers which may prevent them from engaging in certain activities related to ICT use. Besides, some researchers show that personality of the individuals is also associated with different internet uses. For example an individual may be less motivated to use the web, less confident about his skills or more likely to encounter stressful situations that could generate computer anxiety (Hamburger and Ben-Artzi, 2000). However, these psychological predictors may or may not be associated with their socio-demographic characteristics. More opportunity may be needed to ensure females' equality in the interaction with and use of ICTs. This includes the adaptation of schedules in the cybercafés to suit females' convenience, the availability of females' support staff and trainers in the cybercafés and other centers where they can use (Tinio, 2003).

Conclusion

This study carried out a review of the interaction of gender with Information and Communication Technology (ICT). ICT is the latest in the series of continuing technological revolutions and it has a significant influence on gender empowerment. The definition of gender showed that gender is a social attribute and opportunity associated with being a male or a female, and the mutual relationship that exists between them. Thus, even though females are believed to be disadvantaged in their interaction with ICT due to their peculiar situations, there are no conclusive researches to show that there are significant differences in males' interaction with ICT that make them to be superior to females. ICT is a powerful and useful tool for research, teaching, learning, record keeping, business transactions, and so on. Through ICT, particularly the Internet, exciting materials in form of lesson materials, simulation, virtual field trip, tutorials, etc. that are relevant for the achievement of the instructional objectives of a lecture or a class can be made available (Scholastic, 2003).

Summarily, the convergence of information and communication technologies (ICT) has transformed the present-day society into a knowing or knowledgeable society, enabling its users to express themselves, change ideas, discover peers, and enabling them to keep pace with other users over the globe. The study further discussed reasons why females do not have as much interaction with and use of the ICTs.

Recommendations

The following recommendations were proffered based on this study:

- That gender should not be used to discriminate against females in ICT in Nigeria since most researches on gender and the use of ICT are not conclusive and most of them did not show significant differences;
- women should be given opportunities like their male counterparts to attend and participate in ICT programs at their convenience because of their peculiar situations such as domestic roles, time constraints, etc.
- females should be given equal opportunity for admission into science and technology or ICT related courses, and
- workshops, training / re-training, seminars, conferences on ICT should be organized where and when both males and females will have the opportunity to attend.

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Received: September 25, 2012
Revision Received: May 22, 2013