Gender Differences in Computer Literacy Among Clinical Medical Students in Selected Southern Nigerian Universities

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Introduction

Information Technology (IT) has had a positive impact on health care delivery system worldwide, particularly in the areas of disease control, diagnosis, patient management, teaching and learning. Anuobi (2004) pointed out that man has scientifically placed himself in an environment that is global and digital, which predisposes him to constant use of information, its location notwithstanding. Shanahan (2006) believes that the health care industry is in a state of constant and rapid change and due to the increase in scientific knowledge and rapid technological advances, there has been a growing emphasis on the physicians need to efficiently access, retrieve, and use scientific evidences to improve patient care (Li, Tan, Muller & Chen, 2009).

Masood, Khan & Waheed (2010) noted that the availability of affordable computers and the advancement of information technology have resulted in our ability to rapidly and effectively access, retrieve, analyze, share, and store large volumes of information pertinent to patient care and for learning process in a teaching hospital . According to Poelmans, Truyen & Deslé (2009) during the learning process, students are responsible for the management of their own information processes. After their graduation, the job market expects them to function as mobile knowledge-workers. It is therefore vital that students acquire the right attitudes and skills in order to survive in this information society and to deal with the ceaseless information flood.

As Masood, Khan & Waheed (2010) observed, computer skills are vital for medical practitioners of the future. With the medical field being an information intensive profession, to use technology effectively for the advancement of patient care, the medical student must possess a variety of computer skills. However, scholars like Luan, Aziz, Yunus, Sidek, Bakar, Meseran & Atan (2005) have observed that there

is a gender gap in the use of ICTs. Accordingly, the purpose of this study was to determine if there is a gender difference in the computer literacy levels of clinical medical students by looking at how they have access to computers, the frequency with which they use computers, if there is gender difference in the use of various software and look at problems they face when using computers.

Literature Review

Computer literacy has been a subject of educational research for recent years. Computer literacy is defined as the knowledge and ability to use computers and related technology efficiently, with a range of skills covering levels from elementary use to programming and advanced problem solving Lynch (1998). Computer literacy can also refer to the comfort level someone has with using computer programs and other applications that are associated with computers (Wikipedia 2010). Anuobi (2004), described computer literacy as having a basic understanding of what computer is and how it can be used as a resource. To Lynch (1998), computer technology literacy deals with an understanding of an infrastructure that underpins much of today's life, it also means knowing some basic things about ICT, for example, how to save and open a file, or how to use a word processor (Tella & Mutala, 2008).

The needs of a medical student of the millennium generation in a rapidly changing information society has changed, he now has to confront new challenges which are vital to his survival in the information age. Idowu, Adagunodo, & Idowu (2004) indicated that knowledge, skills and confidence with computer technology are now an asset for those entering the competitive employment market. They further pointed out that every aspect of life from education, leisure, and work environment to social interactions is being influenced by computer technology. Moreover, with the increasing use of ICT in education the world over, new skills and competencies are needed by students to be better equipped with the requisite digital literacy competencies.

Essentially, gender refers to sets of relationships attributes, roles, beliefs and attitudes that define what being a man or a woman is within the society. It is a socially ascribed attribute as opposed to sex which is a biological attribute (Oghiagbephan & Asamaigo, 2010). As a result of gender roles assigned by different cultures many women have been brought up to see technology and its use as reserved for on the male gender. According to Munusamy & Ismail (2009) women look at computers and see more than machines, thus considering computers as masculine and complicated to use. According to Asuquo & Onasanya (2006), many factors in and outside the classroom result in girls being turned away from computer technology. These factors include the media depicting men as experts in technology, societal expectations of different goals for boys and girls, the structure of learning tasks, the nature of feedback in performance situations, and the organization of classroom seating. Because these factors are often subtle, they go unnoticed. It is little wonder why girls are not interested in computer technology. This situation has led to what scholars have termed the gender digital divide.

Explaining this, Ikolo (2010), stated that the gender digital divide is manifested in the low number of female users if ICTs compared to men. Gurumurty (2004), observed evidences that points towards gender imbalance in the use of computers and other technologies. According to Tella & Mutula (2008), the issue of gender equity as far as access to and use of ICTs continues to be a topical subject not only in developing countries but the world over. However, available indices have began to suggest that, although there is a gender gap in all countries, with the significant growth in access to and increased educational opportunities for more women, the relative difference between men and women is diminishing (Sorenson, 2002, Kay, 2008 & Munusamy & Ismail, 2009).

In the 1980s, research on computer literacy focused on the question of whether

medical students were ready for the foreseeable omnipresence of computers in the future of doctors' professional environment and if they possess necessary computer skills Link & Marz (2006). When Poelmans, Truyen & Deslé (2009) compared the mean scores of computer literacy and its subscales by gender. The results showed a clear pattern in both the global scale and the subscales: male students report a significant higher degree of perceived computer literacy. In a similar study carried out by Link & Marz (2006) to examine the level of computer literacy of first year clinical students in Vinna, the study showed that although 94% of the student attested to accessing and using computers, of this number only 26% of the female students used computers frequently. Citing Ong & Lai, Luan, Aziz, Yunus, Sidek, Bakar, Meseran & Atan (2005) reported that males had more positive attitudes towards ICTs. Gupta's (2001) study also found significant gender difference in the way females and males rated themselves in their ability to master technology skills. Even though both genders were positive about their computer abilities, males rated themselves higher than females. Kay (2006) reviewed 36 studies on gender and computer use and concluded that the male correspondents have significantly higher perceived computer literacy

On whether there was equality of access between the women academics and their male counterparts, 199 (97.1%) answered in the negative while only 6 (2.9%) respondents confirmed that there was equality of access. (Olatokun, 2007). Again, Link & Marz's (2006) study showed that more male medical students (72%) had access to personal computers (laptops). Respondents were also asked to indicate what computer applications they used. The results depicted that there is marked significant gender difference in application use of computer by male and female subjects. It was clear that male students engaged in applications like word processing, Internet browsing, e-mail, data analysis, programming, and CorelDraw more than the female, except that the females engage in chat and games more than their male counterparts. This result as well can be linked to the issue of fear and anxiety attributed with computer by the female subjects, and may be responsible for their lower engagement in using computer software and applications. Tella & Mutula, 2008).

In a survey, Tella & Mutula (2008) found out that, when respondents were asked to state the number of hours that they used computers in a week, the results showed that there were differences in the male and female number of hours spent using computer per week with male medical students spending more hours than the female medical students. While a considerable number of male students spent from 10-25 hours per week, female students spent between 1-4 hours per week. In another study by Rajab & Baqain (2005), a significant difference was found between males and females in the length of time they used computers. When asked about the frequency of computer use, male respondents (56%) were found to use computers more than female respondents (37%) (Munusamy & Ismail, 2009).

Rajab & Baqain, (2005) concluded that although both gender of clinical students' believed themselves to be competent in word processing, more males than females used multimedia presentations (power point). Luan, Aziz, Yunus, Sidek, Bakar, Meseran & Atan (2005), in their study found out that females were better at word processing and presentations and emailing than males. Olatokun (2007), in his study reached the conclusion that 70.7% female used computers for word processing; 98.5% indicated not using ICT for games at all and a total of 84.9% respondents used ICT very often for Internet browsing.

Methodology

The study employed a descriptive survey method which affords the researcher the opportunity to study the present condition of the computer literacy skills of the clinical medical students. The population of the study comprised of 93 clinical medical students of Delta State University and University of Benin who are in 400

level. The total population was used as the sample size for the study. Data were collected using a self constructed, structured questionnaire that was divided into two sections. Section A was designed to gather bio data while B was meant to obtain data on computer literacy skills of the students. A total of 86 questionnaires were returned. The demographic characteristics of the respondents revealed 50(58.1%) as males and 36 (42%) as females. Data was analyzed using simple percentages.

Results

The results are presented in tables 1-4 below.

Table 1: Gender Differences in Access to Computer

Access Avenues	Male	%	Female	%
Personal computers	16	58	08	22.2
Library	06	12	11	30.5
CyberCafé	23	46	09	25
Home Computers	05	10	05	14
None	00	00	03	8.3
Total	50	100	36	100

The table above furnished the results of the clinical medical students and their access to computers. The response shows that all the clinical medical students use computers for one reason or the other. For the male students their highest access avenue was through personal computers and their lowest access avenue was home computers. The highest percentage for the female students showed the library, only 8% did not use computers at all.

Table 2: gender differences in numbers of hours of computer use per week

Computer Use per week	Male	%	Female	%
1-5 hours	06	12	19	52.7
6-10 hours	28	56	08	22.2
11-15 hours	15	30	05	13.8
16-20 hours	01	02	04	11.1
Total	50	100	36	100

To determine the computer literacy levels of the students, the researcher asked questions on the number of hours students were interested in spending in front of a computer. The response from table 2 above showed that there is a gender difference in the number of hours students spend with a computer weekly. Of the male respondents 28 (56%), indicated that they spent between 11-15 hours using a computer each week, while the highest for the female students was 19 (52%), of between 1-5 hours.

Table 3: Gender difference in the use of various software

Use of software	Male				Female			
	Yes	%	No	%	Yes	%	N	%
Microsoft Word	37	74	13	26	31	86	5	14
Microsoft Excel	17	34	33	66	10	27	26	72.2
Microsoft Power Point	36	18	14	28	14	39	22	61.1
Corel Draw	31	62	19	38	11	30	25	69.4
Acrobat Reader 18 50	43	86	07	14	18	50	18	50
Internet Browsing	44	88	06	12	21	58	15	42
E-Mail	19	38	31	62	28	77.7	08	22.2
Games	38	76	12	24	07	19.4	29	80.5
Data Analysis	08	16	42	84	00	0	36	100

Table 3 sought to determine if there is a gender difference in the use of various software by the clinical medical students. As indicated, more females use Microsoft word and email (86% and 77.7%) more than their male counterparts, whereas, the males are seen to use Internet browsing, Acrobat reader and play games more. The lowest score was generated from the responses from data analysis which was low for both genders as only 16% of male students can use it while it was 0% for female students.

Table 4: Problems Encountered by Clinical Medical Students

Problems	Males				Females			
	Yes	%	No	%	Yes	%	No	%
Fear of computers	6	12	46	92	12	33.3	24	67
Equipment breakdown	12	24	38	76	21	58.3	15	42
Inadequate computer skills	5	10	45	90	18	50	18	50
Lack of access to computers	16	32	43	68	19	53	17	47.2
Lack of time	31	62	19	38	22	61.1	14	39
Inadequate power supply	48	96	2	4	24	67	12	33.3
Lack of interest	9	18	41	82	10	28	26	72.7

From the above table, it is observed that both genders of the clinical medical students encounter some problems when using computers. Although there are observable gender differences in the kind of problems they encounter. Fewer males (12%) experience fear of computers as compared to female students (33.3%). Also fewer male students (10%) indicated inadequate computer skills as a problem while for the female students it was 50%. Results for lack of interest for female students were not as high (28%) as it is for the male students (10%) but there is a slight difference. However, inadequate power supply was indicated by both genders as a problem and with the high percentages recorded (males: 96%; females: 67%), it can be said to be a common problem hindering the students use of computers.

Discussion

This study has been concerned with gender differences in computer literacy among clinical medical students at Delta State University, Abraka and University of Benin Edo State. With the results from this study it is evident that there is a gender difference in the computer literacy skills of the students. The responses on avenue of access to use of computers, it is seen that the male students had more access than females to the use of computers. This can be as a result of the fact that the male students seemed very interested in owning their own computers. This result is consistent with the results from other studies that found a variation in access to computers (Hollander, 1999; Link & Marz, 2006 and Olatokun, 2007). However, it does not agree with the study of Wasserman & Richmond-Abbot (2005). In their study, they found that men and women have equal access to the use of computers.

With regard to the number of hours students spend using computers, the results

also show a gender difference with the males again taking the lead with 56% of them spending 6-19 hours using computers. This result agrees with what researchers like Rajab & Baqain (2005), and Tella & Mutula (2008) have concluded in their own studies, that there is indeed a gender difference in the number of hours males and females spend with computers. Also, Link & Marz (2006) found that men make more frequent use of computers. With computers the more time one spends with it, the higher the level of competency. Therefore, this few hours spent can explain why the level of computer literacy is a bit lower than that of men.

The results of the current study support earlier findings by researchers such as Luan, Aziz, Yunus, Sidek, Bakar, Meseran & Atan (2005) that show gender differences in computer packages used.

This result also indicates that female students are also interested in using computers in the information age and not as several studies have shown that females are not interested in using or getting involved with computers and other ICTs. Both gender encounter problems while using computers, however for the female students the problem of lack of computer use skills and lack of time seemed more pronounced.

Conclusions

In conclusion, this study suggests that although male and female students are able to use computers, there is a gender difference in the number of hours they spend using computers, the software they use and the kind of problems they face.

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