

Factors Mitigating Against Women Participation in Computer Science in Borno State

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Abstract

Women's "second class" position in our society necessitated their struggle for equality with men to enable them survive in this changing society. Western education has influenced some traditional practices of our society, so much that the traditional ties of domestic responsibilities such as running the homes do not bind the modern women. The development of science and technology can make men and women to become self-reliant and less dependent and enable them to contribute meaningfully to the nation building. The paper examines the concept of computer science; the access of women to computer science; the role of computer science knowledge in nation building; and the factors mitigating against the active involvement of women in computer science. Recommendations were suggested: government should provide the necessary facilities needed for the programme; Religious and Community leaders should educate their members about the important of girl-child(women) education in the family and nation building.; They should also be enlightened about gender equality in the society so that the preference of males over females should be eliminated; In order to improve on the enrolment of female children into school, government should emphasis on the laws and policies that prohibit the removal of female children from school and early/forced marriage. So that they (women) can be equally represented with their male counter parts in the discipline.

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Background to the Study

The world has witnessed two major revolutions, viz: the industrial revolution and the information revolution. The information revolution has the greatest impact and caused the most dramatic change in the development of the human race. Computer Science have been the major vehicles of change in the transition from the industrial revolution to the information age. In order to keep pace with the changes brought about by the information revolution, it is necessary to be familiar with the machine called computer. According to Fisusi (2001) Computer is any device capable of accepting data automatically applying a sequence of processes to the data and supplying the results of these processes.

Scott (1993) defined computer, as a modern digital device that is largely comprises a collection of electronic switches, these switches are used to represent as well as control the routing of data elements called binary digits (bit). He stressed further that the technology age in which we are now living is characterized by increasing use of computer system. This act is being experienced in various areas of human endeavours. For instance, computer found extensive application in business financing engineering, health, education, domestic, shares national development etc. Inferring from the above definition and uses of computer therefore, women participation in computer science is still at its lowest ebb.

The Concept of Computer Science and Education

Computer Science is one of the veritable disciplines necessary for national development in the modern world. For any country to develop fast, her citizenry needs to be computer literate. Computer as put forward by Johnson (1985) is an information-processing machine. It is a device, which enables the user to process information. It captures, process and store information (Roger, 1996). Ayeni sees computer as a modern electronic machine, which is used for performing simple or complex processes. It is also seen, as an electronic device that uses instructions provided to it which is stored in its memory. Computer is an electronic machine that can best be described as a powerful device which has the capacity to accept data as input, apply a series of arithmetical and logical operations on the data, and produce the results of these operations as an output information at a very fast speed (Olatunji, 1998). From the description above, a computer can be regarded as an input-process-output system.

Education on the other hand is a means of positive change of individual perception of himself and others, which contribute meaningfully to the development of the society. Education as defined by Umar and Gbana(2003) is a tool used in equipping the individual with the skills and knowledge, which helps in societal transformation. It is the greatest investment that a nation can provide to her citizens for the development of her natural and human resources. From the above discussion therefore, education can be regarded as the head cornerstone for effective nation building. Computer education is that type of education given to the citizens of a country whether males or females, at all levels of learning. So that they can fully participate in social, economic, political and technological development of their country. Computer education is the imparting of computer

knowledge and skills for effective development in different spheres of life (Chinyere, 2001).

The Access of Women to Computer Education

The level of development of any nation depends much more on the level of literacy of her citizen. Education is a birth right and not a privilege of every citizen of Nigeria irrespective of gender disparity (Richard and John, 2002). Women just like their men counterparts need computer science so that they can play effective role in nation building. Women as observed by Ayanniyi (1999) are group of people who constitute valuable resources of talent and energy who need to be given sound education to enable them contribute their potentials in the societal transformation, and improve their family's socio-economic status (Umar and Ghana, 2003). In line with this, the constitution of 1979 of the Federal Republic of Nigeria and the National Policy on education (1998) stress the right of women to education. This boosted the moral and status of women not in small measure. Many women aspired academically and they are serving in various capacities in various disciplines, ministries, parastatals and organisations. Just like these women, many other women who aspire in computer science are presently serving in different capacity across the country. Such women among others include Adu Adeponle Olubukola of citizen bank Lagos; Adeyasa Tolulope Olubukola of mobil oil company Warri; Alo Opeyemi Grace of software development company Lagos; and Kolapo Esther Yetunde-accountant in equity bank Lagos (Faculty of Science Bulletin, 1996-1999).

Despite all these developments, the number of women in computer education is still below expectation especially when compared with their male counterparts. Most women in Nigeria particularly in Northeast are not computer literate and therefore, cannot contribute their potentials to the development of the country IT wisely (Chinyere 2001).

The Role of Computer Science in Nation Building

It would be arduous, if it is impossible to enumerate the areas in which computer science's knowledge are applied. Computer is used in various situations to influence the lives and activities of man. In business for example, computers are used for their accurate and performance in calculations as found in banking insurance, commercial business and other related financial sectors. With the use of computers, which have capacity for information storage, managers have access to relevant accurate and timely information. Banks use computers in their daily routine jobs, which include electronic transfer in banking system. This enable banks check credit balance of any of their customers in another branch of the bank located far away from the customer branch (Fisusi,2001).

Computers are used in military to develop weapons and defence systems.

The Scud and anti-scud missiles as asserted by Omozuwa (2004) are all computers-controlled equipment. Computers are also used to check invasion of air space by unauthorized aircraft. This is achieved by computer-controlled radar. Computers are also used in health industries. Computers are used for medical diagnosis and test of patients' sample. Computer aided topography scanner as observed by Fisusi (2001) help medical

doctors to take several pictures of the body organs, and this can be used for diagnosis. Patients' records in the hospitals are no more manual files. They are now all stored on hard disk or in storage devices for future references. Lately, computer aided scanners are being used to monitor pregnancies.

Another field of endeavour that uses computer is the communication industry. In media communication, both print and electronic media have been greatly influenced by computers. In print media, the computerized printing and publishing machines have raised the standard of journalism since they have access to information from wide area of coverage in the shortest possible time. The transport section of the communication sector particularly air transport as noted by Omozuma (2004) now use computerized air traffic control system which has replaced the mechanical calculating instruments. Small computers are now part of the planes equipment to give timely information to pilots and flight engineers. Another important discipline which cannot be left out from the application of computer is education industry. Computers have influenced almost all subjects in school. Computers are used as tools (Computer-assisted learning) to assist in learning and instructions.

Educational materials such as textbooks can be downloaded through internets and read online or printed through printers. In administrative unit staff and students' records are stored in computers (Fisusi, 2001). Other areas that use computers include police, prison, immigration, customs and many others. The negative impact of computer is reserved to be a subject of other studies. In spite of these enormous contributions of computer, women are still under-represented in the field, why? This takes us to the constraints that hamper the participation of women in computer science.

Factors Mitigating Against the Active Involvement of Women in Computer Science

Many factors inhibit the level of women participation in computer science. One of such factors as observed by Chinyere (2001) is lack of physical facilities. Most schools do not have computer laboratory where the practical aspects of computer can be taught. Where they are available, they are not enough. Other factors are hereby stated below:

Societal Perception

The way the society perceives women influences their enrolment into science and technology. According to Okorie (2000), women as a group in Nigeria are perceived to be weak, less intelligent, irrational and passive. This negative perception on women can deprive them of certain opportunities like formal education and active enrolment into computer science courses. He further stated that because of socialization, men are assigned jobs which involved physical strains, logical thinking and competition.

Parental preference for Male Children

Another factor that militates against women enrolment into computer science is the preference of male children over female ones. Most people see no reason in sending their daughters to school. In situation of scarce financial resources in the family, many parents

prefer to educate only the male children (Chinene,2004). Majority of the people in Nigeria as revealed in the study carried out by UNICEF (2001) live below poverty line with high proportion in the North and in the rural areas. Most families cannot afford to educate all their children. As a result, only one or two children are sent to school. If choice is to be made with regard to who will go to school between a male and a female child, boys are usually preferred. All these and many other factors affect the enrolment of females into computer science studied.

Gender Discrimination

Ogwuazor(1992), is of the opinion that science has been given a masculine image, culturally, science is seen as meant for males while females who pursue science courses are seen as over-ambitious individual who are competing with males as well as deviants who are independent, arrogant and over sophisticated. This explains why men dominate such professions like computer science, carpentry, building and automobile mechanics.

The Ignorance of the Parents

Another limiting factor is that of ignorance of some parents to let their female children be enlightened educationally. Some parents tend to believe that science and technology education entails the exhibition of physical strengths which are not found in women and therefore, strictly restrict science and technology to men alone. In view of this, Ogwuazor (1992), discovered and cited in her study that parental attitude towards male and female children constitutes a great barrier to women's participation in science and technology in Nigeria. In view of the above assertion, the deprivation of female child by parents to pursue educational carriers can be attributed to parental attitude to ignorance and the consequence of illiteracy.

Religion and Culture

In some societies, religious and traditional practices do not allow women to engage in certain activities or professions that expose certain parts of their bodies, hence, such activities that expose their bodies are strongly discouraged. It is because of this reason that only few women join and participate in science and technological based courses (Okorie, 2000).

Inadequate Human Resources

Lack of teachers is another constraint to women in computer science according to (Chinyere,2001).

Early Child Marriage

The cultural practice of early child marriage especially in the Northeast sub-region of the country as observed by UNICEF (2001) and Richard and John (2001) affect the number of females in schools and in computer science subject in particular. Most parents in the sub-region give out their daughters in marriage when they are too young for their consent to be sought. Most of those who are opportune to go to school are withdrawn for the same purpose.

Another major impediment that affect woman participation in computer science is lack of instructional facilities. Most schools that have computer department do not have the necessary software-hardware which are used in the teaching of computer (Chinyere,2001). Most of them teach only the theoretical aspect of the course since there is no enough instructional facilities in schools where a few computers are available the tendency is for the boys to become domineering and possibly bully the girls hardly have access to the machine.

Conclusion

The paper discussed the concept of computer education and the access of women to computer science studies, which is regarded as the steering wheel for national development. We have also seen the role of computer in nation building. The paper also discussed some factors that prevent women from being having access to computer science studies. This includes the preference of males' education over that of females by some parents and lack of instructional materials and poverty. As a result, therefore, some recommendations are given to eliminate the obstacles so that they (women) can contribute effectively in the family up-keep and in moving the nation to greater heights.

Therefore, the researchers put forward that women should not be restricted to the kitchen and taking care of children alone, instead should be encouraged to participate in other aspect of life that contributes to national development especially such as an area of computer science.

Recommendations

As discussed above, the contribution of computer science in nation building is of paramount importance. To alleviate the obstacles that hinder women from having access to computer science studies, the following recommendations are given:

1. The government (public schools) and the proprietors/proprietaries of private schools should make sure that qualified teachers and necessary physical facilities needed for the teaching and learning of computer should be made available.
2. The computer hardware themselves together with their accessories should be put in place before the take-off of the programme.
3. In order to improve on the enrolment of female children into school, government should emphasis on the laws and policies that prohibit the removal of female children from school and early forced marriage. Any parent found wanting with regard to this law should be seriously sanctioned.
4. Religious and Community leaders should educate their members about the importance of girl-child (women) education in the family and nation building.
5. They should also be enlightened about gender equality in the society so that the preference of males over females should be eliminated.
6. The impact of the government also should not be left out by providing the necessary facilities needed for the programme.
7. Computer teachers in schools where the physical facilities are available should ensure that they pay equal attention to boys and girls while giving instruction.

- They should ensure that girls also have equal access to the machine and opportunities for practice
8. Women should not be bound by stringent cultural and traditional practices; they should be allowed to participate fully and actively in science and technological courses.
 9. The parents and general public should be educated and enlightened so as to bring about a change in attitude towards women educational programmes.
 10. The career officers and counsellors should be appointed in schools so as to guide male and female students on their course's careers.
Women participation in computer science course should be encouraged by way of giving loans, rewards, prizes and scholarship to the interested candidates.
 11. Females, who show interest and commitment in computer science should be recognised and to act as role models for the female's gender to arouse their interest etc. For the fact that women need to be self-reliant and empowered to participate and contribute meaningfully to all forms of national development, there is need for serious attention to women education especially in the area of computer science course.

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