PREDICTIVE VALUES OF INFORMATION AND COMMUNICATION TECHNOLOGY IN THE REFORMING GENDER EDUCATION IN NIGERIA

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Abstract

Education is a major instrument for economic and technological development in our society. All sectors across various geographical locations rely on well-educated and informed manpower for their economic growth and development. Meanwhile, in the Educational sector of some parts of Africa like Nigeria, there exist various issues on gender inequality in the system. Where the girl child is not given adequate opportunity to express herself, she is not empowered to develop her skills and knowledge. Hence she is deprived the opportunity to contribute her own quota to the development of the economy. This paper focuses on the reformation of Gender Education in Nigeria via Information and Communication Technology tools which is mobile learning; this is a means of undergoing Educational learning process at once convenience and comfort without having to encounter any form of discrepancy resulting from gender imbalance. This is suggested for adoption by the Educational System of Nigeria in order to allow equality in Education.

Keywords: Information and Communication Technology, gender, reform

1.0 Background to the Study

Education is an important tool to economic growth, development and poverty reduction. This has long been recognised. Education is the process of providing information to an inexperienced person to help him/her develop physically, mentally, socially, emotionally, spiritually, politically and economically (Offorma, 2009). Every child regardless of the gender has right to Education at least basic Education. Education influences an individual's self-realization and assist in the fulfilment of in born potentials. According to Offorma 2009, at the completion of Education it is concluded that an individual has acquired adequate and appropriate knowledge, skills, attitudes and values, known as cognitive, psychomotor and affective behaviours to be able to function optimally as a citizen. These behaviours are the

focus of training individuals in institutions of learning. Despite the noticeable importance of Education, there still exists observable imbalance on equality of right to Education.

In Africa, the girl child struggles to get to the desired peak by facing various hindrances such as religious beliefs, societal influence, culture and traditions. It was gathered from statistics by Claudine (2007) that in Africa completion of primary Education is a goal yet to be attained. This worrying situation also reveals gender inequality among pupils. In some African countries, the gross primary school enrolment rate for girls is generally 10 percentage points lower than that of boys; moreover, the rate for girls in rural areas falls further by 5 to 10 points depending on the country. Completion of primary education and access to secondary school are consequently goals to be attained for African girls.

Nowadays Africans are beginning to see the importance of girl child education, reports show that there are more girls in secondary and tertiary institutions presently and this improvement is encouraging. The bitter side of this is that the improvement is only in the urban areas, girls in the rural areas and cities or towns with conservative traditions or religious beliefs are yet to be part of this improvement. They are denied access to formal education, not considering that if you educate a man, you educate only one person but if you educate a woman, you educate a whole nation. Steps need to be taken to reverse this situation.

Gender inequality is a result of the persistent discrimination of one group of people based upon gender and it manifests itself differently according to race, culture, politics, country, and economic situation. (Wikipedia, 2011). In most societies throughout most of the second millennium, women were deprived of property, education, and legal status. They were made the responsibility of their husbands if married or of their fathers or other male relatives if not married. (Redmond, 2009). Gender inequalities persist because they are supported by social norms and legal institutions, by the choices and behaviours of households, and by regulations and incentives that affect the way economies function. This paper proffers possibilities via Information and Communication Technology to reform Education in order for there to be gender equity in Education.

2.0 Information and Communication Technology ICT as a medium for Knowledge Exchange

Information and Communication Technology emphasises the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.(Wikipedia, 2012).

Information and Communication Technology which is referred to as those technologies that are used for accessing, gathering, manipulating and presenting or communicating information, plays a vital role in diverse area of our society today, These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. In Education, the use of ICT is not left out. There are various forms of learning through ICT they defined by least a dozen different terms, such as web-based learning, computer-mediated communication, tele matics environments, e-learning, virtual classrooms, online instruction, I-Campus, electronic communication, cyberspace learning environments, computer-driven interactive communication, distributed learning, borderless education. (Guri-Rosenblit, 2005).

In recent years, Information and Communication Technology ICT has rapidly acquired a place in society. ICT tools are being embedded in everyday life in developed countries and increasingly in developing countries (particularly mobile devices). The mobile technology was apparently embraced in most developing countries like Nigeria. It was observed recently that mobile devices were owned by virtually every average citizen of this nation. This happens to be one of the tools in Information and Communication Technology. **Mobile Technology** is defined as the exploitation of ubiquitous handheld (or very portable) hardware and wireless mobile networks to facilitate, support, enhance and extend the reach of information or teaching and learning. From this technology came ***Mobile Learning(M-Learning)*** which is distinct in its focus on learning across contexts and learning with mobile devices. One definition of mobile learning (M-learning) is: *Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies.* (Wikipedia, 2012).In other words, with the use of mobile devices, learners can learn from various locations. The objective of M-learning is to provide the learner the ability to assimilate learning anywhere and at any time.

Some of the devices used for mobile technology include PDAs, mobile phones, digital pen and paper, and some more devices that are not yet in the market. Most of the already available once in market are readily acquired by people irrespective of the gender in the developing countries like Nigeria. (Wikipedia, 2012).

3.0 Basic Gender Gaps in Education

Research shows that in West Africa the population of girl child in schools are not up to that of the male child. Most of the girls are either not enrolled in school or are made to drop out of school along the way, for one reason or another. Hence, the inclusion of gender equity in Education as one of the Millennium Development Goals

There are some factors that inform inequality in Education some of these are:

3.1 *Low participation and Poor Performance in many subject especially mathematics and science subject*

The perceptions and attitude of teachers teaching in school are discouraging; this attitude often makes girls to drop out of school. Teachers in some rural part of Africa believes that boys will go to university to take courses like medicine, engineering, architecture and so on, while girls will only study to become secretaries, teachers, designers and so on (Angeline 2011). This perception or attitude of teachers inform how they teach and attend to the girls in classes especially mathematics and science, these end up affecting the performance of the girl child. This then will lead to reduced school attendance and finally giving up on education.

3.2 *Poverty Level*

The level of poverty which is determined by the family size or income affects the enrolment of girl child in schools in the rural areas of the developing countries; in Africa, polygamy is the most practice system of marriage, this leads to increased number of children in a family, hence the difficulty of enrolling all the children in school at once. The leaders of the family often conclude that rather than investing in girl child it is better to send the boys to school since the boys keep the family lineage and girl end up in another family. The income of the family has another effect on the girl child education, in most part of Africa where poverty reigns; the girl child is use for income generating activities. Some makes the girls to play second fiddle to their male counterparts. The girl generate income that is use to finance the boys schooling. The girl child is given out in marriage at tender age for some no good enough

reasons, which include raising funds from the bride price paid, to keep the family or to fund the Education of the male child.

3.3 *Religious and Cultural Beliefs*

Some religions and cultures that were not favourable to girl child are still in existence in some conservative parts of Africa. Parts of these include; in so many traditions, it is believed that the place of a woman is in the kitchen; hence only boys are sent to school and girls are kept in the kitchen.

Some cultures too impose *public restrictions* such as forbidding girl child from relating with the opposite sex in public, they are not allowed to seat together in public places like schools, banks, religious houses or grounds. Women are even restricted from market places; it is the men that run businesses in markets. Also girls are not allowed to drive or ride with boys In some Africa countries like Saudi Arabia, women aren't allowed to drive, or even ride bikes, and men aren't allowed to drive women they're not closely related to. The kingdom is currently dealing with the dilemma of how to get 367,000 girls to school on buses that can only be driven by men. The logical question at this point is this: If no men are allowed to come in contact with schoolgirls, and women aren't allowed to drive, who will be driving the school buses? (Jamie, 2008).

Furthermore, some cultural groups have special clothing requirements for the girl child which are often unacceptable in some schools, and uncomfortable for learning environment. Girls get into trouble not following these requirements. All these and many more are the gender issues that restrict girls from having same rights as boys in Education.

4.0 ICT Tools for Reformation

Mobile Learning (M-learning) is part of a new learning landscape created by the availability of technologies supporting flexible, accessible, personalized education. Learners' everyday uses of mobile phones and other devices such as games consoles, which can also be used for learning, are now major drivers for the rapid uptake of mobile learning throughout the world. M-learning is a natural extension to conventional e-learning practice through which mobile technology allows a greater degree of access to learning resources. The central concept of M-Learning is that of ubiquitous or ambient learning, in which access to learning resources, is truly independent of time and place. This involves:

1. the use of mobile access devices such as laptop computers, hand-held PDAs (Personal Digital Assistants) and mobile phones
2. the enhancement/development of learning materials and management systems to work with an increasing range of access devices
3. the development of learning opportunities created through the development of these technologies(Simon Starr, 2003)

4.2 Components of a mobile learning system

The components that mobile learning system includes

1. Authoring tools for content capture and conversion for mobile delivery
2. Mobile game and simulation templates
3. Mobile learning management, which registers and track mobile learning use
4. Mobile learning content management systems that download and manage a repository of mobile content
5. Enterprise application integration tools.

'Mobile'according to Futurelab, 2006, generally means portable and personal,like a mobile phone. Many examples of learning with mobile technologies fit into this description. As devices are increasingly multi-functional, with the ability to support speaking,listening, watching, reading, writing, searching for information, performing calculations,playing games and much more the range increases daily and includes games consoles, digital voice recorders,e-book readers, electronic dictionaries, and assistive technologies for learners with disabilities (Kukulska-Hulme,2010**)**.

Futurelab, 2006, categorized these devices on two dimensions of personal versus shared and portable versus static. Some of these devices can be classified as both portable and personal and are what people most commonly think of in relation to mobile technologies, these devices normally support a single user, they are generally perceived as being very personal. The networked nature of such devices affords communication and information sharing, meaning that while the devices themselves are personal, the information within them can be shared easily. They are portable because they are taken from place to place and hence can be available in many different locations.

Some other technologies, less portable, can still offer personal interactions with learning experiences. Such technologies are static in the sense that they can only be used in one

location, but remain personal because of their small size and allocation to (typically) one single user, therefore, are personal static technologies.

Being able to be physically moved about is not the only way these technologies could be portable, there are some others that can provide learning experiences to users on the move, the devices themselves are not physically movable, but it is the learner who is portable, not the delivery technology. Such devices are typically seen as being less personal, and are likely to be shared between multiple users. Their larger size means they are also better suited to multiple-user interactions. These are shared portable technologies. The larger the devices become, the more they provide shareable interactions and hence less portable, but such would generally not be classed as mobile technologies, they are just to show the complete space of possibilities engendered by this classification.

Having classified these devices to be used "The hypothetically perfect device would be small and fit easily into one's pocket. The screen should fold out to A4 paper size and have paper readability. Wireless connectivity should be of high speed, the user should be always online with the possibility to switch seamlessly between wireless ones and phone networks. The device should have an integrated phone and support all the major office formats for reading and writing as well as "pdf" format. Security should be high, and if the device is lost the data should be made useless with no risk to the owner. The perfect device should render standard web pages perfectly and offer the ability to strip out advertisements etc. and display useful content only. The web pages should be readable offline as well as online. This should facilitate an understandable on-the-fly text-to-voice and voice-to-text feature. The following list describes a close-to-perfect handheld device

1. Always online connectivity
2. Bluetooth for connection with other devices
3. Built-in video cannon for displaying presentations etc.
4. Camera for documentation in the field
5. Flash support
6. Full size keyboard available
7. Full WI-FI connectivity
8. Large storage capacity (Large is a relative term changing with time)
9. Screen of acceptable size and readability
10. Large battery capacity

11. Messaging client for peer-to-peer communication
12. Non-volatile memory for backup
13. Phone ability
14. Read Adobe Acrobat documents
15. Read/write common office formats
16. Scanner and printer built in
17. Small compact device
18. Support multimedia content as well as flash, java and java script etc.
19. Synchronize and check e-mail with common mail clients.
20. Text-to-voice screen reader and Dictaphone

(Nitin Upadhyay, 2012)

4.3 Technologies that support mobile learning

1. PDA: Personal Digital Assistant ,
2. Tablet PC UMPC mobile phone, camera phone and SmartPhone
3. Learning Mobile Author, e.g. for authoring and publishing WAP, J2ME and SmartPhone
4. Personal audio player , e.g. for listening to audio recordings of lectures
5. Handheld audio and multimedia guides, in museums and galleries
6. Handheld game console, modern gaming consoles

4.4 Access Technology in M-learning

The networks and infrastructures which enable the devices to be connected to one another and to the Internet, including cable-free solutions that allow learners to move around and still stay connected. GPS (global positioning system) navigation makes it possible to identify a learner's location; its uses include sharing context-specific resources and delivering information relevant to a journey or a particular place

Mobile access devices are generally used to access electronic learning resources such as e - mail, simple web sites and Virtual Learning Environments (VLEs). Devices may either access these resources on-line or off-line. When on-line, the device is connected directly to learning resources via a network, typically the internet. This can be achieved in a number of ways including:

a) Mobile phone connection (GSM(Global Systems of Mobile Communication), GPRS(global positioning system), UMTS '3G') – a mobile phone is used to connect to the internet and either access learning resources via the phone's built in screen (certain phones have e-mail programmes and web browsers built-in) or via connecting the phone in turn to a laptop or PDA. GSM, GPRS and UMTS (or '3G') are different mobile phone connection methods

b) Wireless LAN connection (WiFi) – a laptop or PDA is connected to the internet through a wireless Local Area Network (LAN). With wireless LANs the network connection between the laptop or PDA and the wall is simply replaced b y a radio link. WiFi is emerging as a popular wireless LAN standard and is becoming increasingly available in conference centres, hotels, learning centres and other business venues .When off-line, learning resources must first be downloaded from the source e-mail server, web site or VLE to a laptop, PDA or mobile phone then taken out on the move. They can then only be used as standalone resources. The process of downloading (and possibly uploading after modification) learning resources is called synchronisation. Laptops are generally synchronised with learning resources by plugging them directly into a network when back at base. Mobile phones and PDAs are typically synchronised by connecting them to a PC back at base which is in turn connected to the network. Many phones and PDAs now come with cables and software for doing this.

4.5 Applications in Learning & Teaching

The most obvious application of M-learning is in extending 24/7 access to conventional e-learning resources and activities such as on-line programme information, lecture notes, reading, discussions etc. Several additional applications for M-learning in learning and teaching include:

4.6 Location-specific learning support:

For field-trips, museum visits and on-the-job training - anywhere where access to a PC may not be possible or desirable. For example:

1. multimedia resources viewed on PDAs can guide learners through exhibits in a museum.
2. mobile phones can be used to co-ordinate groups of learners on field trips and observations can be submitted by learners in situ via SMS 'texting'.
3. student nurses on hospital placement may use a PDA to look up details of a medical procedure, look up reference texts or refer to their own notes whilst on a ward.
4. Recording observations on location for on -the-street questionnaires, for example, or for observing learners' practice in the workplace

4.7 Bite-size, on the move learning:

Learning resources may be broken down into bite-size 'nuggets' so that a day or week's worth, say, of resources can be downloaded from a learning management system on to a mobile phone, PDA or laptop and taken away for study during spare time. Perhaps, on the train, during a lunch-break or just in a more relaxed atmosphere maybe outside in the garden. Smarter learning management systems may in future be able to personalise nuggets for learners based on awareness of their programme of study, understanding and progress.

4.8 Interactivity in contact sessions:

On-line, wirelessly connected PDAs and laptops can facilitate a greater level of interaction when used in contact sessions. Opportunities for polling groups' opinion on various issues exist. Learners can vote to choose alternative activities and topics for discussion during lectures. Anonymous contributions to discussions and brainstorms can be made, this encourages greater participation. Ultimately, wireless access allows the full functionality of VLEs into the contact situation.

4.9 Study organisation and support:

PDAs and laptops can support learners and help to organise their studies in contact sessions and on the move through:

1. note-taking facilities e.g. 'graffiti' writing on some PDAs, digital pens used with tablet PCs
2. reference materials look-up e.g. viewing pre-loaded notes/readings during lectures
3. mind-mapping and out- lining facilities
4. assistive features e.g. screen readers, dictionaries

5. planning facilities e.g. diary and calendar functions, tasks and reminders

Mobile devices appeal to girls and women as well as boys and men, although they may favour different activities. Mobile learning supports empowerment of underprivileged, marginalized groups, particularly women and children in rural areas. Developing literacy and numeracy skills leads to reduced dependence on others. (Kukulska-Hulme, 2010)

4.10 M-Learning in Reforming Gender Education

Women can take part in mobile learning programmes which enable them to receive text messages on the phone to practise their reading and writing.

Since learning materials are developed in electronic format it is easy to update the learning materials. Also, since females can use their mobile devices to access the learning materials from a central server, they can receive these updates as soon as they are made.

Learning is flexible since females can be located anywhere and complete their education as long as they have the technology to access the learning materials. This is possible because of the wireless connectivity of mobile technology.

Females can access learning materials anytime so they can select the time they learn best to complete their coursework.

There will be more opportunities for informal learning for immediate application since females will be able to access the learning materials as needed.

Developers of learning materials can take advantage of the computing power of the technology to personalize the learning experience for individual female students.

The communication capabilities of the emerging technology will allow females to connect with each other to collaborate during the learning process. Also, females will be able to share their expertise and conduct peer tutoring.

Since the learning with emerging technology will be learner-focused, females will be more active during the learning process which will promote higher-level learning. This will help solve the problem of female students not being active in a classroom setting.

Since most female students already have mobile devices, educational institutions can take advantage of this opportunity and design and deliver courses for delivery on different types of mobile technologies

Using these already widespread devices for teaching/learning activities can be an attractive option for busy females. They could utilize their spare time for productive usage such as learning grammar, when they are away from school and home. Providing opportunity for females to use mobile devices for learning in their private time allows the learning to be individualized to some degree; if they are having trouble with a section, they can re-read it and do the exercises again without fear of delaying their fellow students (or asking embarrassing public questions). If they are feeling confident in a section, they can skip it and not face sitting though a redundant lecture from the teacher. (Mohamed, 2010).

5.0 Conclusion

With the flexibility and accessibility of mobile technology, education can be taken with ease by the girl child at her convenience as it can be taken anywhere at any time. Girls from regions where it is traditionally and religiously unacceptable to interact and seat side by side with their male counterpart in the open can benefit from this technology by taken their studies in the comfort of their homes. Women who couldn't have been in school as a result economic situations can also benefit from this technology since they can learn on the move. These technologies can also improve the performance of girl child in Science Technology and Mathematics. (STM).

6.0 Recommendation

It is therefore recommended that policymakers, legislatures and government at all levels take cognisance of the opportunities provided by these technologies in order to give the girl child a proper education that would allow them make their own contribution to the development of the country, and so be able to achieve one of the millennium development goals of providing the girl- child quality education.

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