EGM/ICT/2002/EP.7
5 November 2002

United Nations
Division for the Advancement of Women
Expert Group Meeting on
"Information and Communication Technologies and their impact on and use as an instrument for the advancement and empowerment of women"
Seoul, Republic of Korea,
11-14 November 2002

IT's Hot for Girls!

ICTs as an instrument in advancing girls' and women's capabilities in school education in Africa

Prepared by

Shafika Isaacs*

***** The views expressed in this paper, which has been reproduced as received, are those of the author and do not necessarily represent those of the United Nations.

Contents

A sticker on a computer in an African school states: ITs HOT for Girls. A boys-only class scratched out the H and replaced it with an N, thus reading: Its NOT for girls.

Input by representative of SchoolNet at a SchoolNet Africa meeting

"I have learned to use the Internet at school. I have used it to work on collaborative projects with other learners where we used the Internet to work on our projects like the one about women in traditional marriages from different culture in Africa"

Sophia Nansuba, 18, Nabisunsa High School, Uganda, , at SchoolNet Africa launch, November 2001

1. Introduction

Education is perhaps the most strategic area of intervention for the empowerment of girls and women in any society and the use of information and communication technologies (ICTs) as an educational tool in the promotion of women's advancement has immense potential. For this reason, it demands careful scrutiny and conscious intervention from decision-makers.

The application of ICTs as a tool for effective enhancement of learning, teaching and education management covers the entire spectrum of education from early childhood development, primary, secondary, tertiary, basic education and further education and training. This paper however focuses on attempts at introducing ICTs in formal primary and secondary school education in Africa.

Any interrogation into the use ICTs as a tool for the advancement of African girls and women in education has to confront three major contextual areas: educational and development issues, ICT issues and gender issues and the confluence between these. This paper contends that a clear conceptual framework in problematising the education crisis from a developmental, gendered and ICT perspective is lacking and is critical in providing conceptual clarity on appropriate strategies for using ICTs as a tool for women's empowerment particularly in Africa.

2. Context

Education systems internationally are undergoing a sea-change. The shift from traditional pedagogy premised on the transfer of information and on perpetuating patriarchal relations to outcomes-based, learner-centred, learner-empowered, teacher-as-facilitator education takes place both independently of and also influenced by the growing application of new information and communication technologies (ICTs). For example, in 1995 the South African government introduced a process of curriculum reformed named Outcomes Based Education as an alternative to the historical Apartheid-based education system. Similarly in Mozambique and elsewhere in Africa the process of curriculum reform is currently under way.

Parallel to the broader curriculum reform process, ICTs are being introduced incrementally as a tool to improve education systems. ICTs are purported to offer extraordinary functionality that enhances learning and teaching, challenges power relations in the class room, including unequal gender relations, as well as improve education administration and management systems. Its growing application is stimulated by increasing pressure to provide access to larger numbers of learners, of all ages and dwindling public funding allocation for education.

In the developing world however, and in Africa in particular, this shift takes place within a social context beset with crises characterised by dire lack of educational facilities, scarce resources, poor infrastructure and lack of access to formal education by a growing African youth population. Here access to education, the quality of education and educational decision-making is anomalously skewed against girls and women.

3. Lack of research

There is a dearth of information, research and codified knowledge on women and the educational use of ICTs in school education in general and particularly in Africa. Moreover, where there is research available, these are usually conducted by researchers located outside of the immediate local contexts. This has a strong bearing on providing clarity and insight on the conceptualisation of the problems faced by women and girls with particular reference to ICTs and education from a developmental perspective which in turn leads to shortcomings in developing appropriate strategies.

To date, there is only one dedicated study on the gendered impact of ICTs in African schools conducted by the World Links for Development program based on the experiences of four countries.[1]

4. Conceptualising the problem

In problematising the use of ICTs as an empowering tool for women and girls in African schools, consideration needs to be given to

- The developmental challenges and how this is manifested within the education sector
- The challenge of establishing ICT access and its use as a tool for empowerment in schools
- The usefulness of ICTs as a pedagogical device
- The gendered dimensions in all of the above

4.1 The developmental and educational challenge

The developmental and educational challenges in Africa's formal schooling systems are formidable. They include wide ranging problems relating to access

[1] Mar Gadoid, C (2001): Exploring the gender Impact of the World Links Program, World Links.

to education, high teacher pupil ratios in classrooms, shortage of qualified teachers, a brain drain of teachers, the HIV Aids pandemic which is decimating the learning and teaching community throughout Africa, budgetary cuts in education, limited infrastructure etc.

In Africa, an estimated 45 million youth do not have access to education. Here girls make up the larger proportion of youth out of school. A recent study revealed that overall the low enrolment of girls at primary school has not improved in the 1990s. The percentage of female enrolment at primary school in Africa has remained the same at 45% and has only shown a percentage increase at the secondary level.[2]

Table 1: Percentage of enrolments who are girls at Primary and Secondary levels

	1990		*1997*	
	Primary Enrolments (percentage female)	***Secondary Enrolments (percentage female)***	***Primary Enrolments (percentage female)***	***Secondary Enrolments (percentage female)***
World	*46*	*44*	*46*	*45*
Sub-Saharan Africa	*45*	*43*	*45*	*44*

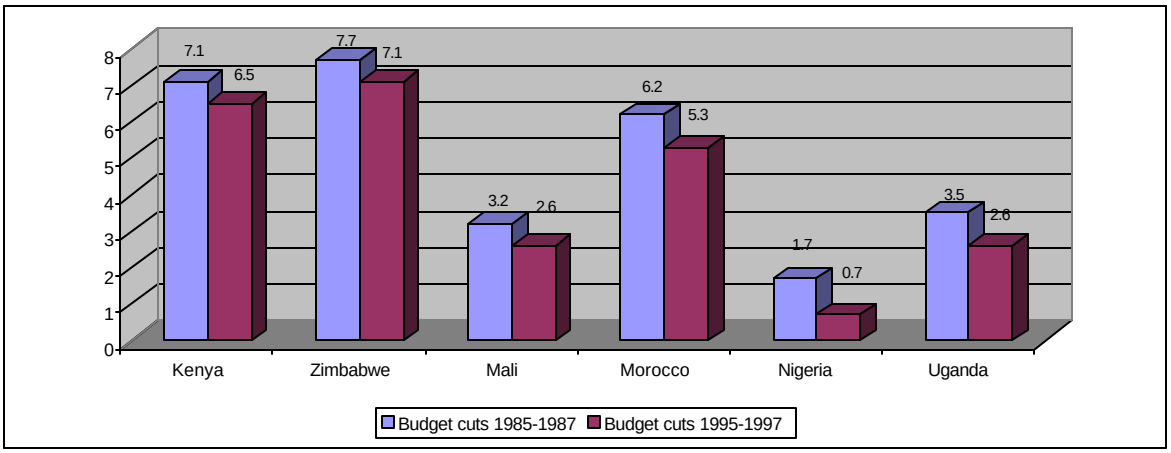
Figures taken from UNESCO, World Education Report, 2000

The barriers to access to education in most countries in Africa are influenced by a combination of social, cultural and economic factors.

Secondly, national education budgets have been cut over the past ten years in a number of African countries. Kenya for example, has stopped hiring teachers in 1998 as part of a structural adjustment plan imposed by the International Monetary fund. Budget cuts for a ten-year period (1987-1997) in selected African countries, are clearly depicted in chart one below.

[2] UNESCO: World Education Report, 2000

Chart 1. Education Budget Cuts in African Countries. 1987 vs 1997



Source: Human development Report 2001

The education budget of Nigeria is the lowest among the selected countries. In spite of that, it has been cut by over 50%, although the country has the highest population on the continent. Educational budget cuts are usually outcomes of liberalized fiscal policies which coincide with the privatization of education globally. [3]

Thirdly, budgetary cuts, high teacher pupil ratios, the brain drain of African teachers, poor educational resources, high HIV/Aids prevalence among African learners and teachers also impact on the quality of education in general and for girls and women in particular. Out of 23 countries listed as having a pupil/teacher ratio of above forty in 1997, 19 were in sub-Saharan Africa.[4] Only 73 % of teachers in Sub-Saharan Africa, have teaching qualifications that certify them to teach according to national standards.[5] In a pilot UNESCO-UNICEF survey of least developed countries in 1995 it was found that, in most countries, one third or more of students gathered in dasses without even a useable chalkboard. In more than half the countries, over 90 % of the pupils in the final grade of primary education did not have a textbook in their mother tongue.[6]

The HIV Aids pandemic is also decimating the leaner and teacher population in Africa. Teenage girls are are infected at the rate of five to six times the rate of teenage boys. They are also the first to be detained at home to care for ailing relatives. UNICEF estimated that twelve million children in sub-Saharan Africa have lost parents to the disease, a figure expected to double in the coming decade. Not only do children lose their families, they are often plunged into deeper poverty, denied education, forced onto the streets, and into labour. In

[3] Human Development Report 2001
[4] A Decade of Education, Education for All 2000 Assessment, UNESCO, 2000, CD-ROM.
[5] UNESCO, 2000, Education For All 2000 Assessment, Statistical Document, p.40.
[6] Schleicher et al. 1995, quoted in UNESCO, Achieving Education for All; Demographic Challenges, p.39.

Kenya, though, HIV prevalence rates are said to be decreasing. There are however, 700 AIDS reported deaths everyday. Teachers seem to be most affected. According to the World Bank Press release, in the Central African Republic, 85% of teachers who died between 1996 and 1998 were HIV positive. In Zambia 1,300 teachers died in the first ten months of 1998 compared with 680 in 1996 and HIV positive teachers are estimated at over 30% in parts of Malawi and Uganda[7] According to Mike Crawly[8], " In Kenya alone, nearly 1,500 teachers died last year, up from just 10 teachers' deaths in 1993" What has become most disturbing is the discrimination that AIDS orphans suffer from teachers and head teachers.

The above is a cursory glance of the depth of the social crisis in African education system and within this, the gendered disparity is apparent.

4.2 The gender divide in the digital divide

The use of ICTs in African schools takes place against the social backdrop pithily described above. The concept of the "digital divide" has been useful in articulating highly skewed access to new information and communication technologies particularly in the developing world, and it has helped devise action plans to promote digital opportunity, digital inclusion and bridging the digital divide.

The digital divide highlights issues relating to access to ICTs, capability and capacity in using ICTs as an educational device, the development of local content on an ICT platform and appropriate policy measures to create an enabling environment for using ICTs.

ICT penetration in African schools remains extremely limited particularly with reference to computers, the email and the Internet. Access to ICTs remains highly uneven within countries and across the African continent – an extension of the developmental disparities that have characterised the region for decades. Figure 1 below provides an overview of a few African countries where schools with computers are shown as a proportion of the total number of schools in the country

Figure One: Computer Penetration Ratios at Schools in African Countries[9], 2001

[7] World Bank, Washington, http://www.Inweb18.worldbank.org/ne…/d85862c24b5d549d85256bb2006e517e?openDocumen

[8] Mike Crawley http://www.csmonitor.com/durable/2000/07/25/p1s4.htm 5/28/02

[9] Note that these are approximate estimates based on informal interviews with schoolnet representatives in the countries concerned, conducted by SchoolNet Africa

Country	*Number of schools*	*Schools with computers*
South Africa	*28798*	*5 000*
Egypt	*32 000*	*10 000*
Ghana	*35 000*	*500*
Namibia	*1 519*	*60*
Mozambique	*7 000*	*20*

South Africa has the most developed economy in Africa, the highest teledensity and hence the highest degree of access to ICTs relative to the rest of Africa. And yet, the disparities even in South Africa remain significant. Of the approximate 29 000 schools, only 5000 have computers and of these, a fraction has internet access, despite the increase in initiatives to get schools online in the country. On average in Mozambique the learner-computer ratio is 1 computer to 650 learners compared to 1:24 in Europe and 1:6 in the USA.

The main barriers to ICT access in general relate to the small number of computers relative to the large numbers of teachers and students per school, the high cost of Internet access and the dearth of technical skills to assist with trouble shooting an maintenance when computers break down.

Notably girls are further limited from school computer labs in some countries in the context of this general limitation in access. A study commissioned by World Links for Development found that in reality it is harder for girls to access computer labs, particularly in Uganda and Ghana especially after school hours.

Furthermore, there remains a dearth of local content particularly on the Internet for use by learners and teachers who communicate in their local languages and policy frameworks particularly in education to provide an enabling environment for the effective educational use of ICTs are virtually non-existent at this stage.

4.3 Education reform and ICTs

The introduction of ICTs in African schools also takes place against the backdrop of continuing skepticism about the pedagogical value of ICTs. To date the jury is still out on the experience with using educational technologies such as ICTs in adding value to learning and teaching in schools in the more developed countries like Canada, Europe and the USA, despite the more pervasive access to ICTs in these schools. It is argued that there are significant educational reform processes taking place that can be empowering that does not require the use of ICTs in particular.

In Africa, this debate takes place in the context of depleting educational resources and the huge opportunity cost of investing in ICTs which appear to be very costly, especially when the evidence that it promotes education remains limited. For many, educational investment should focus on infrastructure and basic resources such as text books, schools, chalk, toilets and clean running

water and that investment in ICTs to the extent that it provides universal access at school level is cost-prohibitive.

The above provides a cursory glance at the complexity of the challenge to use ICTs as a worthwhile, empowering educational device for women and girls and attempts to express the need to provide greater clarity in defining the problems and the challenges from a gendered perspective. Again, limited research in this area particularly limits the ability to problematise the use of ICTs more clearly.

5. Gender-limited Frameworks on ICTs in Education in Africa

In Africa various frameworks have been developed that attempts to address the the educational challenge and the challenge to bridge the digital divide. One of the most important framework documents is UNESCO's Education For All (EFA): An International Strategy to put the Dakar Framework for Action on all into operation. [10]

Strategy 6 of the EFA document calls for integrated strategies for gender equality in education that recognises the need for challenge in attitude, values and practices. It suggests advocacy strategies involve the media which leads to greater gender sensitivity and responsiveness among educators. Support capacity building to enable a full diagnosis of the gender issues. It also urges for the revision of national policies, the promotion of gender mainstream and clear policy statements.

The EFA document also dedicates its strategy 10 to harness ICTs to help achieve EFA goals. It focuses mainly on the need for formal and non formal basic education it too does not entertain the issue of using ICTs and its use in advancing women and girls.

Similarly, the African Information Society Initiative processes spearheaded by the United Nations Economic Commission for Africa (UNECA) proposed an African Learning Network comprising of a SchoolNet Africa, a VarsityNet and an Out of School Youth Network (OOSYNET).[11] However the document also fails to integrate an explicit gendered approach to the formation of an African Learning Network.

More recently, the New Partnership for Africa's Development (NEPAD), a program led by African heads of state in promoting African economic, political, cultural and social renewal, calls for a tele-education project but here too fails to make the link to the potential it has to empower girls and women in particular.

[10] UNESCO (2002): Education For All. An international strategy to put the Dakar Framework for Action on Education for All into Operation.
[11] UNECA (2000): The African Development Forum '99 Post ADF Summit. The African Learning Network: Emerging from Behind the Knowledge Curtain.

Evidently, there is are shortcomings in existing frameworks relating to gender mainstreaming as well as targeted programs towards the promotion of the advancement of girls and women though the use of ICTs in education. This remains a key challenge for the UN Experts Group Meeting.

6. The Experience Thus Far: The rise of SchoolNets in Africa

A range of school networking projects have mushroomed over the past three years throughout Africa. These include, but are not limited to, projects in Botswana, Egypt, Ghana, Mozambique, Namibia, Senegal, South Africa, Uganda, Zambia and Zimbabwe. Most of these initiatives are at different stages of evolution and are developing their own innovative models of school networking. Yet, they are confronted with similar issues, particularly the lack of political, financial and technical support.

A typical schoolnet in Africa bears the following characteristics

- An organisation or group promoting access to ICTs in schools in a country
- Minimum number of 5 schools in regular communication and interaction on learning initiatives using information and communications media and technologies
- Computer distribution and connectivity services offered by the schoolnet institution
- Inter-school networking and collaborative projects using the broad array of information and communications technologies
- Content and curriculum development and sharing
- Teacher training in ICT use to enhance teaching
- Schoolnets vary in organisational form from being voluntary associations comprising different groups of individuals, to NGOs to flagship projects based within ministries of education
- Schoolnets are largely donor supported and they are mainly small scale pilot projects

Indeed, that most schoolnets in Africa are largely donor-supported pilot projects also raises systemic challenges in terms of their sustainability and national integration. That gendered integration is extremely limited and where girls have access to and use ICTs effectively, they are largely by default rather than conscious programs to advance girls and women, poses a further systemic deficiency. Examples where IC Ts appear to have advanced and promoted young girls and women teachers in particular include:

1. Access: SchoolNet Uganda targeted girls-only schools to install computer labs thereby encouraging and ensuring that girls have access to the technologies.

2. Capacity building: much of the capacity building initiatives have focused on teacher training and their use of ICTs as a teaching device. SchoolNet South

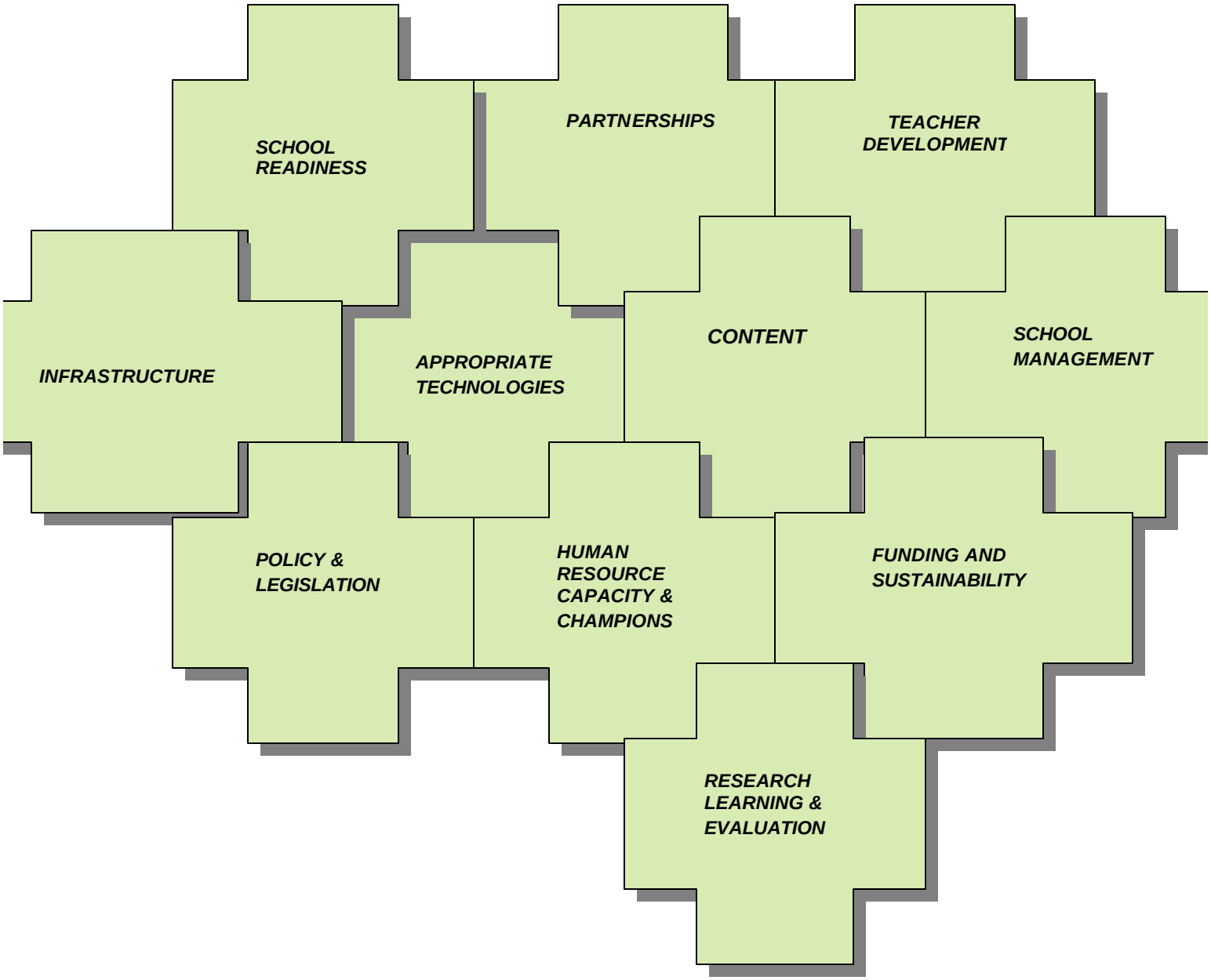
Africa led the way in training more than 4000 in basic ICT skills over the past three years. They have subsequently formed an Educators Network, 51% of whom are women.

Learner Networks: SchoolNet Mozambique and SchoolNet Uganda have both encouraged teachers to facilitate learner collaborative projects using the email. As Sophia quoted at the start of this paper suggests, they develop collaborative projects on issues affecting women, thereby raising awareness, and as girls they use the email to network with other learners in different schools both within their countries and in foreign countries. One of the theme areas for the collaborative projects in Mozambique focused on girl drop-outs and the reasons for this.

Developing Local Content: One program that now promotes the development of local content from the perspective of African learners is the ThinkQuest Africa program. Historically ThinkQuest has been an international web-based learning program which involves learners working in teams to develop websites. During 2000 a Nigerian girl, Oyinda Osinowo won the Gold Award as part of an international team. Using Oyinda Osinowo as a role model has encouraged the participation of girls in the ThinkQuest Africa program in 2002 – here the focus has been on the production of African content by African learners, thereby encouraging them to be both consumers and producers of information.

The development of national schoolnets and in the context provided by the AISI, led to the formation of SchoolNet Africa (SNA) which is a network of networks promoting education through ICTs in African schools. SNA has worked with its partners in developing an integrated framework for ICT application in schools entitled The Schoolnet Value Chain is depicted in figure 2 below:

Figure 2: The SchoolNet Value Chain



The value chain raises the need for a systemic, integrated approach to the educational use of ICTs. However the value chain does not give sufficient recognition to gender considerations and the need to engender the value chain is imperative. A few aspects of the value chain will be highlighted thus:

Appropriate Technologies and Access: This part of the value chain speaks to the need to find technological solutions that are appropriate to local conditions. A

gendered approach to this would incorporate technologies that are sensitive to the differential needs of girls and boys, men and women. Similarly, gender-sensitive access to the technologies would have similar considerations. Whilst it promotes the idea that ICTs are a means to an end, a device to promote and enhance learning and teaching, finding appropriate, workable, sustainable and affordable technological solutions remains important. Here SNA with its partners have developed an access model that incorporates a range of factors:

- the promotion of an education rate in telecom policy reform,
- preferential pricing on ICTs with the private sector
- the use of refurbished computers and the establishing refurb centres,
- the use of open source software and operating systems
- the establishment of helpdesks

Here too, its reference to ICTs are not confined only to computers, email and the Internet, but also includes print media, radio and television. Such a broader definition of ICTs also ensures a wider user network and potentially reaching larger groups of women and girls. However a gendered approach will also incorporate a targeted intervention in fostering access to computer labs by girls and women teachers and the development of software that fosters gender sensitivity.

Teacher Training: Teacher training in the use of ICTs as an educational tool is a crucial part of the value chain. Thus far most ICT-based teacher training projects have been small scale pilot initiatives and the challenge to integrate teacher training into the teacher training systems at national level remains key. A gendered approach here would ensure that teacher training courseware are gender sensitive and that women teachers are particularly encouraged to participate in these programs.

Education Content and Curriculum: This involves the production and consumption of local, relevant and appropriate education and social content and curricula through multi-media application of ICTs including community radio, television, the Internet and cd-roms. Educational content development ensures educational use of ICTs at schools. The development of local education content and curriculum particularly in local languages represents a crucial education value added dimension of the use of ICTs. A gendered approach here will entail the development of education content by girls and women and the development of content that is gender sensitive.

The schoolnet value chain depicts critical success factors at national level. These have been corroborated by two recent studies on the experience with ICT application in African schools. Both acknowledge the above-mentioned factors and reiterate that policy matters, that thinking big is important but that it is equally

important to implement on a smaller scale and that champions and management matter[12]. However, again gendered considerations are notably absent.

7. Recommendations

In view of the above, this paper proffers the following recommendations:

7.1 Investment in research

That there be greater investment in research and development in the arena of ICTs, education and women's empowerment. A systematic research agenda which addreses issues of women's needs, interests, perceptions of ICTs, key issues relating to gender differences and the context within they occur in education, and policy options for empowering women through the use of ICTs in education.

7. 2 Developing an appropriate conceptual framework

Here it is proposed that consideration be given to both providing conceptual clarity on problematising the use of ICTs as an educational device and a tool for the advancement of women and girls in education as well as conceptual frameworks that are systemic in approach and geared towards developing appropriate strategies for the empowerment of women.

7.2 IT's hot for girls projects

That there be conscious, targeted interventions for advancing young girls and women teachers. These could include inter alias

- Projects to promote girl techies at schools, i.e. girl lab technicians
- Projects targeted at girls-only schools which enhance access to ICTs i.e. bigger and more computer labs
- Collaborative projects which promote young girl learners
- Content-related projects that involve girls and women in content production and which highlight the plight of girls and that promote positive images of girls and women
- A girls@home project that targets girls out of school like that organized by Hewlett Packard in Saudi Arabia

8. Conclusion

Because of the strategic role of education and because of the concentration of younger generations in the school-based systems in particular, a stronger, more dedicated intervention to promote young girls in schools in poorer countries, will go a long way in developing gender equality in today's world. Indeed, the jury is still out on the value added by ICTs in education especially in Africa. Furthermore, the opportunity costs of investing in ICTs in African schools are undoubtedly high with reference to the need for school buildings, toilets, electricity, clean running water etc. However, ICTs offer a window of opportunity

[12] James, T (ed): 2001: Whetting the appetite for ICTs in African schools, IDRC, www.idrc.ca/acacia and Yates, C (2001): Lessons learned and critical success factors, DFID, Imfundo, www.imfundo.org

for girls and women, and young learners in general and for improving education systems as a whole. The evidence that it reaps benefits remains largely anecdotal and is still being gathered. The intervention in Africa is still very new and it is still too soon to talk about the impact of ICTs on education and on advancing girls and women. Yet,the risk of not investing in the potential that ICTs provide is arguably much larger. This is why we need to continue with this grand experiment.

Bibliographic Sources

A Decade of Education, Education for All 2000 Assessment, UNESCO, 2000, CD-ROM.

Human Development Report 2001

Imfundo (2002): Delivering the Vision. Workshop – April 2002. Workshop Reports

James, T (ed): 2001: Whetting the appetite for ICTs in African schools, IDRC, www.idrc.ca/acacia

Mar Gadoid, C (2001): Exploring the gender Impact of the World Links Program, World Links.

Mike Crawley http://www.csmonitor.com/durable/2000/07/25/p1s4.htm 5/28/02

Schleicher et al. 1995, quoted in UNESCO, Achieving Education for All; Demographic Challenges,

UNECA (1999): African Information Society Initiative. An Action Framework to Build Africa's Information and Communication Infrastructure. www.uneca.org/aisi.htm

UNECA (2000): The African Development Forum '99 Post ADF Summit. The African Learning Network: Emerging from Behind the Knowledge Curtain.

UNESCO, 2000, Education For All 2000 Assessment, Statistical Document, p.40.

UNESCO: World Education Report, 2000

UNESCO (2002): Education For All. An international strategy to put the Dakar Framework for Action on Education for All into Operation.

World Bank, Washington, http://www.Inweb18.worldbank.org/ne…/d85862c24b5d549d85256bb2006e517e?openDocumen

Yates, C (2001): Lessons learned and critical success factors, DFID, Imfundo, www.imfundo.org