

# *ICT in Education Policy – Reflecting on Key Issues*

---



*ICT in Education Policy - Reflecting on Key Issues*

*Presented at: ICTs in African Schools, A Pan-African workshop focussing on using ICT to support the education systems in Africa, organised by the Ministry of Education (Botswana), Schoolnet Africa and The Commonwealth of Learning, in partnership with other international agencies, Gaborone, Botswana, 28 April 2003*

*Further information: Connections article Official conference web site*

*by: Vis Naidoo, Educational Specialist, Educational Technology, The Commonwealth of Learning*

## **Introduction**

Evidence from large studies and meta-analysis suggests that use of ICTs, in particular computer technologies, is correlated to positive academic outcomes, including higher test scores, better attitudes towards schools, and better understanding of abstract concepts. A longitudinal study of a statewide experiment with computers in the classroom found that those most in need of help - low-income, low-achieving students, and students with disabilities - made the most gains. In addition to better performance in traditional measures of academic achievements, a secondary benefit of ICTs in education is to familiarize new generations with the technologies that have become integral components of the modern world.[1]

This quote from the book *Technologies for Education* illustrates three key points, or benefits, of ICT for consideration:

- Using ICT can result in improved learning;
- ICT offers the greatest support to learners from disadvantaged backgrounds; and
- ICT impacts the society that the learners are in.

For these benefits to occur, we have to determine what the most conducive education environment is for using ICT. We also have to address the need for policy that offers a vision and framework for using ICT within the education system.

This paper offers an analysis of why ICT is an important part of our modern society and the role it plays in the education system. Based on this analysis, and a review of literature, the paper also outlines the need for a systemic approach to using ICT and the key elements to developing a high-quality policy.

## ICTs and Social and Economic Development

Development has often been understood in narrow terms to be about increasing income and improving the standard of living in a country. But this concept does not take note of the importance and implications of how a society and people develop. Indeed there is increasing recognition that development should have people's growth as its central pillar, along with economic growth.

In this context, Mansel and Wehn have noted that "knowledge and human capital are essential to all aspects of development"[2] They further note that key to this form of development is to ensure that all people in a country have the ability to acquire and generate knowledge. This is where ICTs become vital, as they are the primary tools to enable the acquisition, generation and use of knowledge that forms the bedrock of effective development.

However, just having new hardware and software is no guarantee of development. The "warmware" - that is, the people - are perhaps the most important cog in this wheel. ICT is enhanced by a policy that ensures people are capable of using it to source and assimilate the information and transform it into useful knowledge.

The key point is that using ICT for development depends upon economic, social, cultural and technological factors. All of these factors need to be taken into account when creating an environment and conditions that will encourage and provide opportunities for using ICT to support the development processes within countries. Therefore, the task for us within the education sector is to identify ways of creating those necessary conditions within the education system to maximize the benefits of ICT, and thus support development.

With the appropriate conditions in place to benefit from ICTs, our learners (at all levels of the education system, i.e., within the schools, colleges, universities, non-formal learning environments, etc.) can benefit and build both themselves and their society. This is becoming increasingly important in developing countries that are quickly losing their traditional advantage of lower labour costs. Clearly in a world that is increasingly being driven by technology and access to knowledge, low labour costs will not be seen as a comparative advantage for much longer.

## ICTs and Education – the Relationship

It is my contention that if we can put in place the necessary environment to encourage the use of ICT for learning, we will also provide the platform for development and improvement in our society and economy.

Considering this approach, we need to look at the nature of the relationship between ICT and education. Yusuf Sayed, a Senior Education Advisor to DFID, in an article entitled "Missing the Connection?" raises important questions about this relationship, many of which will be addressed during the course of this five-day workshop:

Can ICTs make a difference to development and education? Why and how are ICTs being used in education - are they integrated into the system or simply added extras? How are they being used in teaching and learning? Given the high costs and shrinking resources in education, are ICTs a wise investment? What investment is being made in teachers and other roles necessary to support ICTs applications? Are ICTs being used to bridge or widen gaps or are they creating new ones?[3]

In answer to that last question, many people will argue that technology developments have, indeed, increased the divide in the world and that a new gap is emerging: a gap between those with access to information, generally the richer and smaller segment of society, and those with no access to information, generally the poorer, larger portion of society. On the other hand, others see technology as the opportunity for the developing countries of the world to enter into the information age by "leapfrogging" over the problematic transition stages that more-developed countries have experienced.

No matter which end of the spectrum you place yourself, perhaps the questions that should be asked are these:

- What can be done to improve the education system so that we can increase access, improve quality and build a more skilled and informed citizenry?
- What can be done to encourage the marginalized sections of our society, whether they are girls and women, displaced people, nomads, refugees or rural people, to enter into the education system?

It is in responding to these questions that the relationship between education and ICT becomes evident. Clearly, many of the current education systems in Africa are unable to cater for all its learners (at both the formal and non-formal levels). The education systems are often stretched with less financial resources, reduced numbers of teachers (many of whom are either under- or unqualified) and insufficient and poor-quality learning resources.

We know that ICT is not the panacea to these challenges, but it has been demonstrated that ICT can contribute to implementing effective solutions. ICT provides a support to the learning, teaching and administrative/management processes within the education system. For example, ICT offers opportunities for distance education to poor people who live in rural areas. ICT can also be used to support teachers who lack adequate skills and content knowledge, thus contributing to improving the quality of learning.

Many teachers who are hesitant to sit in classrooms or feel they are too old for the formal education system would find the interactive and asynchronous nature of ICT helpful for their professional development.

The next question is how can ICT be integrated into the system. Clearly this requires a systemic approach that is governed by clear policy and implementation processes and plans.

## Policy Processes for a Systemic Approach

Any effort to integrate ICT into the education system requires the leadership of the government and the education ministry, working together with other relevant ministries. This leadership must have a clear vision of why the government is enabling the use of ICT within the various sectors of the education system and the type of society it hopes to achieve by doing so. It also must have a clear vision of the mechanism that the government intends to use to implement ICT. This vision then needs to be integrated with national policies.

David Walker, in an article in the Higher Education Policy Journal,[4] noted "three pre-conditions for a successful introduction of new information technologies into an education system:

- an appreciation by government of the financial, resource and operational requirements and the resulting consequences;
- a commitment by government to give time and take responsibility for decision-making and implementation strategies;
- a commitment to a policy of an integrated support service encompassing teacher and technician training, curriculum and assessment - together with software and hardware provision."

This appreciation, commitment and policy process has been undertaken in various developed and, increasingly, developing countries.

Why is this need for policy to inform a systemic approach so vital to the successful integration of ICT into the education system?

The pervasive nature of technology and its effects (either directly or indirectly) in society affects how people approach and access it. Technology use depends on many factors: access, money, personal interest, perceived value, etc. In the education system, this uneven application of technology can result in a huge digital and knowledge divide in a country. Some schools have technology literate teachers and/or money and will use ICT, while other schools, those poorer and less literate in technology, will be left behind. In the context of education, having a sound policy, as well as an implementation strategy that complies with that policy, could result in a more systematic introduction to and use of ICT.

Once this vision, policy and implementation strategy for using ICT in the education system is developed, the next step is ensuring that this policy is integrated into the general education policy,

telecommunications policy, trade and investments policy and culture policy. However, some policy makers prefer to keep the policy of ICT in the education system separate, and instead ensure that it is congruent with other policy statements, as noted above.

But what constitutes good policy? Needless to say, there is no single policy document or template that can meet the needs of all governments and address all contexts. There are, however, generic elements that any policy on ICT in education should cover. These are:

- a careful analysis of the current context that the country finds itself in with respect to the type of society and economy that is being built and the education system necessary to contribute to it;
- research and analysis of international developments and trends in ICT use in education; and
- an outline of the key issues that need to be addressed together with proposed methods of doing so.

Based on this analysis and research, a policy for introducing ICTs into the education system should address the following elements.[5]

Preparing all sectors of the education system to understand the investment in and value of technology

It is important for any policy to outline the preparatory steps needed to ensure that schools and other components of the education system are ready to use the technologies for educational purposes. Some of the criteria for education-system readiness include appropriate national and school level policies, awareness by school management of the advantages of ICT for education, a plan and management system for using ICT, potential management and administrative uses, initial investments necessary and expected recurrent expenses.

## Preparing schools to accept the technology

This includes constructing a policy to enable certain basic infrastructure such as electricity, phone lines, school buildings, safe and secure environment and insurance are available. Certain minimum infrastructure requirements are important to enable the use of ICT.

## Procuring and installing the technology

Any policy statement needs to address the type of hardware, operating systems and software that would be conducive to school environments in the county, or at least to identify a decision-making framework. This includes models for efficient, affordable, quality access to the Internet for schools. Such elements would also need to set student-computer ratio targets and technical support mechanisms.

## Training teachers to use ICT

Teachers need to understand the application of ICT to support their teaching and administration. Therefore policy should identify ways of improving teacher capacity in the use of ICT as well as their

specific integration into teaching systems and pedagogical models. The policy should also outline the type of additional staff required to support computers and related technologies.

## Developing and managing content

The value of using ICT in the schools is best realized when appropriate content is developed and used to enhance and support learning, teaching, administration and management. This involves the production and consumption of local, relevant and appropriate education content through multimedia application of ICT. Therefore, policy in this area is vital to provide for the development and use of content.

## Planning for continuous evaluation and research

Policy on research and evaluation is critical within the context of dynamic and changing ICT and its application to the education environment. The constant research and evaluation agenda will ensure that improvements are made to how ICT is used in the education system, and this data and analysis will contribute to any review of policy.

## Integrating curriculum

ICT on its own has limited uses in the education and training system. Its intrinsic value lies in the integration of the technology to support and enhance learning and teaching in various subjects. Policy options that identify mechanisms and frameworks that encourage this integration are, therefore, important.

## Providing ongoing technical support

The use of ICT in the education system requires different levels of technical support. Policy on using ICT in education needs to identify the levels of technical support necessary and outline how those needs would be addressed. For example, the first line of technical support would need to be based within the school, which requires the training of teachers. Further technical support via help facilities, contracts with local technicians and companies could also be factored into the policy.

## Providing ongoing curriculum support

The ongoing support of teachers is crucial to enable increased and better use of ICT. Such support would include how to integrate the use of ICT when teaching different subjects. Policy in this area will also indicate to the teachers what is expected of them and the type of support they could expect.

## Developing partnerships

Implementing ICT in the education sector requires a substantial amount of money and skilled personnel. Therefore partnerships between government and the private sector, development agencies, school

communities and others become important. The identification of this approach is important to include in any policy document.

These 10 elements offer critical success factors for the use of ICT in the education system and are, therefore, necessary in any ICT in education policy. This contention has been corroborated by two recent studies on the experience with ICT application in African schools.[6] Both studies acknowledge the above-mentioned factors and reiterate two key points:

In matters of policy, while thinking big is important, it is equally important to implement on a smaller scale; and

Champions and management matter.

Other Critical Issues

The way a country is structured also has an impact on ICT in education policy. The level of centralization or decentralization of a country's education system will determine how policies are constructed, the nature of what is being proposed and how it will be implemented. It will also determine how "top-down" or "grass roots" the policy and implementation will be. In many African countries, using a decentralized approach could result in a lack of central co-ordination, implementation and funding. Such uneven development and implementation of the policy could result in new divides emerging in the education system. Therefore policy development is needed at a central level to provide a sound framework for ICT, while allowing for and enabling local community level involvement.

All African countries have weak ICT infrastructure. For any education system to make use of ICT, the infrastructure (computers and telecommunications) needs to be developed and extended to all sectors of the education system. An "infrastructure development plan can be supported by detailed policies for administrative sectors, geographic areas, types of services, types of educational institutes, etc." [7]

As part of this plan for infrastructure development, the building of the ICT economic sector through government purchasing power is also necessary. This will ensure that low costs for bulk buying, appropriate vendor support; content development companies and vendors are available throughout the country.

It is difficult to ensure that all of these activities get done within a department or ministry of education. Often the nature of the co-ordination between departments, development agencies, the education system (managers, teachers, teacher colleges, etc.), the private sector and others requires an agency that can focus on this as a full-time task. It is in this context that the value of schoolnet organizations as an agency of government becomes important to consider when developing ICT in education policies.

It is important to ensure that flagship projects are identified in the policy document. These projects offer policy makers, planners and those responsible for implementation an opportunity to engage with immediate activities, thus being able to get results that can serve to inform the education sector of the value of ICT. The key is to be able to work with teachers to develop their professional competence in this area, thereby realizing the policy in this area. It is generally accepted that teachers will use computers if

they find a benefit for their work and their personal lives. It will be important to identify creative ways (as part of the flagship project) to make this happen. The other crucial group is the learners. Getting them to use computers and related technologies is often easier, and the benefit is seen more rapidly.

As noted earlier, governments need to recognize the cost implications of any policy. ICT is generally an expensive resource for schools and the education system, and more so in developing countries when funds to purchase equipment in foreign currency (generally US dollars) are scarce, education budgets are low, levels of teacher skill are low and where "the scarcity or non-existence of more traditional educational facilities and equipment in many areas often makes suggestions for introducing the sophisticated new technologies into the education system or into grassroots communities seem a denial of reality." [8] This, together with other expenses like the telephone costs, Internet service provider costs, maintenance, software, etc. can cause severe strains on any education or school budget.

## Conclusion

In talking about the policy requirements for ICT in education, I have raised a number of issues, all of them premised on the positive relationship between ICT and social and economic development as well as on the necessary relationship between ICT and learning and teaching.

In outlining these relationships, and arguing that a systemic approach using policy as the mechanism to systematize it is the most logical route to follow, I further noted a range of critical issues that need to be addressed. This list is by no means exhaustive, but it gives one a good sense of the issues to confront when developing integrated ICT in education policy.

While this process seems daunting, it is an absolute necessity.

## References

- [1] Haddad, W.D. and S. Jurich. 2002. ICT for Education: Potential and Potency. In Haddad, W.D. and A. Draxler. Technologies for Education. Paris: UNESCO and AED.
- [2] Mansel, R. and U. When (eds.). 1998. Knowledge Societies: Information Technology for Sustainable Development. New York: Oxford University Press.
- [3] Sayed, Yusuf. Missing the Connection? Using ICTs in Education \*NEW\*. The Commonwealth Government & Business Guide to Information and Communication Technology. [www.cto-ict.org/index.php?dir=04&sd=30&aid=1151](http://www.cto-ict.org/index.php?dir=04&sd=30&aid=1151) (Retrieved 17 April 2003).
- [4] Walker, D. 1989. "Introducing informatics into education at the national level", Higher Education Policy. 2 (4): 41-45.
- [5] These elements are based on research done at the Centre for Educational Technology and Distance Education, Department of Education, South Africa and on an unpublished paper by Shafika Isaacs and



Vis Naidoo (A Schoolnet Value Chain for Africa - An Integrated Model Enhancing Education Through the use of ICTs).

[6] The two recent studies mentioned are Isaacs S and I. Broekman I (eds). 2001. Whetting the Appetite for ICTs in African schools. IDRC. [www.idrc.ca/acacia](http://www.idrc.ca/acacia) (Retrieved 17 April 2003) and Yates, C. 2001. Lessons Learned and Critical Success Factors. DFID, Imfundo. [www.imfundo.org](http://www.imfundo.org) (Retrieved 17 April 2003).

[7] ICT Policy and Strategy: Guidelines. 2002. [www2.unescobkk.org/ips/ict/ict1\\_sub4.htm](http://www2.unescobkk.org/ips/ict/ict1_sub4.htm) (Retrieved 17 April 2003).

[8] Gagliardi, R. and I. Byron. Communities and the Information Society: The Role of Information and Communication Technologies in Education UNESCO: International Bureau of Education. [web.idrc.ca/en/ev-11118-201-1-DO\\_TOPIC.htm](http://web.idrc.ca/en/ev-11118-201-1-DO_TOPIC.htm) (Retrieved 17 April 2003. Revised 31 May 2005)