

## ICT in Education in South Africa

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Source: *World Fact Book*<sup>1</sup>

*Please note:*

This short *Country Report*, a result of a larger *infoDev*-supported *Survey of ICT in Education in Africa*, provides a general overview of current activities and issues related to ICT use in education in the country. The data presented here should be regarded as illustrative rather than exhaustive. ICT use in education is at a particularly dynamic stage in Africa; new developments and announcements happening on a daily basis somewhere on the continent. Therefore, these reports should be seen as “snapshots” that were current at the time they were taken; it is expected that certain facts and figures presented may become dated very quickly.

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## Overview

In all the different facets of the ICTs for education prism, South Africa boasts more than a decade of accumulated experience from its wide range of projects and programmes pioneered by noteworthy champions across the stakeholder spectrum of communities, the private sector, civil society, donor, development, and government agencies. A variety of tested models on ICT access, digital content development, teacher training and professional development, optimal usage, partnerships, and resource mobilisation have encouraged significant learning among innovators, practitioners, and policymakers. The scale of all these interventions to date has led to at least 22% computer penetration in all public schools. As well, all tertiary institutions have some form of ICT access, ICT research and/or ICT teaching programmes, although limited strides have been made in the informal, ABET, and TVET sectors. While South Africa has a policy on e-education only for the schools and Further Education and Training (FET) college sectors, herein too lay animated debate on the optimal ways to implement the policy.

Over the coming period, with South Africa acting as host for the 2010 World Cup and the national government embarking on accelerated economic growth strategies, the race is on to move to broadband and promote ubiquitous ICT access. South African education institutions in general, and the schools and FET college sectors in particular, are set to grow significantly in ICT access, teacher training, and professional development and usage. However, major challenges still need to be overcome, such as the lack of a comprehensive policy on ICTs in education that covers all sectors in education, the continued need for leadership and co-ordination of various initiatives, the promotion of enhanced learning through optimal usage of the technologies, and, above all, the need to demonstrate the value of the investment in ICTs through improved performance of learners and teachers and improved employability in the changing labour market.

## Country Profile

Since 1994 the South African education landscape has undergone major transformation in governance, management, curricular reform, and teacher professional development. Central to this transformation has been a complete policy overhaul in the form of a new national qualifications framework (NQF) and a new curriculum framework for schools based on the concept of outcomes-based education (OBE). The NQF is a key mechanism for creating an egalitarian education and training system in South Africa with redress, access, mobility, and progression as key objectives.<sup>2</sup> OBE, on the other hand, is a learner-centred approach which considers learning as an interactive process between educators and learners, where the educator serves as both teacher and facilitator. This new system, introduced in 1996 as Curriculum 2005, was considered one of the most ambitious and far-reaching reform programmes in southern Africa because it signalled a fundamental shift from South Africa's apartheid past by promoting the principles of equity, democracy, human rights, and economic prosperity. While very noble in its intentions, the implementation of OBE remains fraught with challenges, which the national Department of Education is committed to address.<sup>3</sup>

Table 1 provides some selected socio-economic indicators for the country.

**Table 1: Basic Economic Indicators: South Africa**

Indicator	
Population	46.9 million (2005) <sup>4</sup>
Languages	11 official languages: English, Afrikaans, isiNdebele, isiZulu, isiXhosa, Setswana, Sesotho, siSwati, Tshivenda, Xitsonga, and Sesotho sa Leboa
2005 Economic activity (% of GDP)	Agriculture: 27.4 Industry: 17.8 Services: 54.9
Human Development Index	121 (out of 177 countries) <sup>5</sup>
Per capita gross national income (US dollars)	\$430 (2003); \$480 (2004); \$530: (2005)

## The Education System

South Africa's National Qualifications Framework (NQF) recognizes three broad bands of education:

- General education and training (GET), which runs from Grades 0 to 9 and includes adult basic education and training
- Further education and training (FET), which takes place from Grades 10 to 12, and also includes career-oriented education and training offered in other FET institutions such as technical colleges, community colleges, and private colleges.
- Higher education and training (HET), which includes education for undergraduate and post-graduate degrees, certificates, and diplomas, up to the level of the doctoral degree.

Since 1994, South Africa established a single national system of education which is managed by the National Department of Education (NDOE) with the support of nine Provincial Departments of Education (PDOE). The NDOE assumes national responsibility for higher education, while administrative responsibility for the schools sector lies with the PDOEs based on the national framework for school policy. A Council of Education Ministers, consisting of the Minister of Education, the Deputy Minister of Education, and the nine provincial members of the Executive Council for Education, meets regularly to discuss national education policy, and co-ordinate action. In addition a Heads of Education Departments Committee (Hedcom) consists of the Director-General, Deputy Directors-General of the NDOE, and the heads of PDOEs. The functions of Hedcom include facilitating the development of the national education system, sharing information and views on national education, co-ordinating administrative action on matters of mutual interest, and advising the NDOE on a range of matters.<sup>6</sup>

### **Education Statistics**

South Africa has 12.3 million learners, an estimated 386,600 teachers and 26,292 schools, including 1,098 registered independent or private schools. Of all schools, roughly 6,000 are high schools (Grade 7 to 12) and the rest primary (Grades 0 to 6). There are more than a million students enrolled in the country's 24 state-funded tertiary institutions: 11 universities, five universities of technology, and six comprehensive institutions. These have recently been integrated, with the country's former 36 universities and "technikons" being amalgamated into larger tertiary institutions. Higher education is also offered at hundreds of private institutions, which are registered with the NDOE to confer specific degrees and diplomas.<sup>7</sup>

South Africa's gross enrollment ratio (GER) in 2004 stood at 98%. The gender parity index (GER of females divided by the GER for males), used to indicate the level of access by females to education compared to males, was 1.01 in 2004, suggesting that there is gender parity in the country.

### **Spending and Challenges**

Education was allocated the largest share of the national budget in 2007/08 to the tune of R105.5 billion (estimated USD\$15 billion). Much of this budget is allocated to teacher salaries, teacher support staff and assistants as well as bursaries to encourage young people to train as teachers.<sup>8</sup>

South Africa's education system still faces severe challenges in combating the legacy of apartheid:

- Illiteracy rates remain as high as 24% of adults over 15 years of age.
- There remains a shortage of qualified teachers; one-third of teachers teaching mathematics and science were not qualified. Of 50 countries studied in the Trends in International Mathematics and Science Study (TIMSS), 2003, South African Grade 8s featured at the bottom of the scale in mathematics and science. However, Grade 12 pass rates and performance in math and science are showing slow signs of improvement.
- The majority of schools remain under-resourced, under-supplied, and over-crowded.

In contrast to these bleak statistics, South Africa also boasts some independent schools that rank among the best in the world.<sup>9</sup>

### **Infrastructure**

According to the World Economic Forum (WEF) *Global Information Technology Report*, South Africa has the most modern and best developed telephone system in Africa and a vibrant ICT sector with an annual investment of USD\$9.6 billion. The *Report* uses the Networked Readiness Index (NRI), covering a total of 115 economies in 2005-2006, to measure the degree of preparation of a nation or community to participate in and benefit from ICT developments.<sup>10</sup> The WEF ranks South Africa 37th out of the 115 economies.

Yet, most of South Africa's infrastructure is also poorly linked and spread unevenly throughout the country.<sup>11</sup>

Table 2 provides a brief snapshot of South Africa's ICT infrastructure.<sup>12,13,14</sup>

**Table 2: ICT Infrastructure Indicators, 2005**

<b>Indicator</b>	
Fixed-line subscribers	4.7 million
Mobile subscribers	23.1 million
Dial-up subscribers	1.08 million
Broadband subscribers	165,290
Internet users	3.6 million
Television broadcast stations	556
Radio stations	AM 14; FM 347

Various provincial governments and municipalities in South Africa have invested significantly in infrastructure development and will continue to do so over the next few years in the build-up to 2010 when South Africa hosts the World Cup soccer event. For example, the Gauteng provincial government is currently involved in a R50 billion (USD\$7 billion) plan for infrastructure development in Gauteng. The plans include roads and rail development as well as local government service delivery improvement. They will target underdeveloped zones with second-economy characteristics for expansion and provision of ICT infrastructure.<sup>15</sup> These plans, together with the implementation of South Africa's national policy on e-education, suggest that the schools and education institutions are set to improve ICT access and usage.

## **ICT Policies**

The current ICT in education policy framework has been evolving since 1996 and is embedded within a broader national government economic, social, and development strategy which includes:

- Attention at the highest level in government to the role of ICTs in the promotion of economic growth, job creation, social development, and global competitiveness
- Linkages of South Africa's strategy to a broader pan-African mandate as expressed in the commitment to the New Partnership for Africa's Development (NEPAD) programme and its dedicated project promoting e-schooling
- Overhaul in the education and skills development system at all levels

- A dedicated policy on the transformation of learning and teaching through the use of ICTs, particularly in the formal schools and FET college sectors

### **National Government Strategy**

The role of ICTs in the South African government strategy for national economic growth, social development, and job creation has received increasing prominence over time. In 1996, Mr Thabo Mbeki, then the deputy president of the country, played a prominent role in the historic Information Society and Development (ISAD) conference which gave rise to the African Information Society Initiative (AISI) spearheaded later by the United Nations Economic Commission for Africa (UNECA). Since then, a host of programs and strategies have been introduced that demonstrate central government commitment to the promotion of South Africa as an ‘information society’. These include the following:

#### ***PNC on ISAD***

In 2001, as President Mbeki established the Presidential National Commission on the Information Society and Development (PNC on ISAD) which consists of representatives from the public and private sectors. This commission advises government on the optimal use of ICTs to address South Africa’s development challenges and enhance the country’s global economic competitiveness.

*For more information:* [www.pnc.gov.za](http://www.pnc.gov.za)

#### ***PIAC on ISAD***

A Presidential International Advisory Council on Information Society and Development (PIAC on ISAD) was established to advise government on addressing the digital divide with education as a key focus area. This council consists of CEOs of major international corporations and experts active in the ICT sector.

#### ***NEPAD***

The South African government has been prominent in its support as host country to the Secretariat of the New Partnership for Africa’s Development (NEPAD) programme of the African Union, particularly its e-Schools programme and as home to its first pan-African Parliament.

*For more information:* [www.nepad.org](http://www.nepad.org)

#### ***ASGISA***

In 2005, the government launched its Accelerated and Shared Growth Initiative for South Africa (ASGISA), which represents a concerted national effort to accelerate skills development and economic growth. Two priority components of ASGISA are electronic communications as a cornerstone to commercial and social infrastructure development and education and skills development. The former includes, among other things:

- Implementation of a strategy to rapidly grow South Africa’s broadband network
- Implementation of a plan to reduce telephony costs more rapidly

- Completion of a submarine cable project that will provide competitive and reliable international access, especially to Africa and Asia

For more information: [www.info.gov.za/asgisa](http://www.info.gov.za/asgisa)

### **SITA**

In 1999, the South African government established the State Information Technology Agency (SITA), which serves as a public sector ICT company focused on the effective and efficient provision of ICT services with government at national, provincial, and local levels. Its range of services includes the setting of technology standards for the use of refurbished PCs in public education institutions.

For more information: [www.sita.co.za](http://www.sita.co.za)

In February 2007, a National Information Society and Development (ISAD) Plan as a framework for building an inclusive Information Society in South Africa was adopted by the Cabinet. Within this Plan, the vision for the country is expressed as follows:

*“To establish South Africa as an advanced Information Society in which ICT tools and information are key drivers”*

The Cabinet also approved the establishment of a Ministerial ISAD Committee and its corresponding Forum of South African Directors-General (FOSAD) ISAD Cluster. The ISAD IGRF and the Ministerial ISAD Committee were approved as the national Institutional Mechanisms for building an inclusive Information Society in South Africa<sup>16</sup>.

### **Sectoral Strategies**

At a sectoral level, two specific policies stand out in support of ICTs in education, particularly in the schools sector. These include the e-rate policy and its related establishment of an Educational Network (EduNet) and the e-Education White Paper. .

#### ***Education Network and E-rate***

The Department of Communications (DOC) leads all ICT initiatives in South Africa through its Electronic Communications and Transactions Act (ECA) of 2002, which is an extension of its Telecommunications Act of 1996 and 2001 and which promotes the establishment of a Universal Service Agency (now referred to as the Universal Service and Access Agency of Southern Africa (USAASA),<sup>17</sup> a Universal Service Fund, an Education Network (EduNet), and an “e-rate,” all of which serve at least conceptually to support access to and use of ICTs in education institutions.

The Education Network is to be an entity that would network all public schools and education and training institutions.<sup>18</sup>

The e-rate allows discounted access to Internet services to education institutions in South Africa. Section 73 of the ECA states that Internet services provided to all public schools

and all public further education and training institutions must be provided at a minimum discounted rate of 50% of the total charge levied by the licensee. The discount includes, but is not limited to, any connectivity charges for access to the Internet, charges for any equipment used for or in association with connectivity to the Internet, and all calls made to an ISP.<sup>19</sup>

### ***E-education White Paper***

Policy development on ICTs in education date back to 1995, with the establishment of the Technology Enhanced Learning Initiatives (TELI). which was followed by the Feasibility Study for the Establishment of a Dedicated Educational Channel. In 2001, the National Department of Education and the Department of Communication jointly released a Strategy for Information and Communication Technology in Education, which is believed to have laid the basis for the e-Education White Paper adopted in 2004.<sup>20</sup>

The goal of the policy is that every learner in the primary and secondary school sectors should be ICT capable by 2013. To achieve this, schools are expected to be developed into e-schools consisting of a community of both teachers and learners. E-schools are further defined as having:

- Learners who utilise ICTs to enhance learning
- Qualified and competent leaders who use ICTs for planning, management, and administration
- Qualified and competent teachers who use ICTs to enhance teaching and learning
- Access to ICT resources that support curriculum delivery
- Connections to ICT infrastructure

In such institutions, the teachers and learners will be able to function across three dimensions:

- Operational – referring to skills to use ICTs
- Cultural – developing cultures that support the practices of using ICTs
- Critical – ability by teachers and learners to challenge assumptions embedded in the success stories about ICT.

E-education is defined as much more than just developing computer literacy skills and the skills necessary to operate various types of ICTs. It is also the ability to:

- Apply ICTs, access, analyse, evaluate, integrate, present, and communicate information
- Create knowledge and information by adapting, applying, designing, inventing, and authoring information
- Function in a knowledge society by using appropriate technology and mastering communication and collaboration skills

This policy is confined mainly to the schools and FET college sectors and does not consider the higher education sector or the Adult Basic Education and Training (ABET)



programmes; community/NGO-led skills development initiatives; research and development institutes; small, medium, and micro enterprise (SMME) staff development; and internship programmes.<sup>21</sup>

## Policy Implementation

Implementation of the e-Education White Paper rests with the PDOEs. Some provinces (Western Cape, Gauteng, and Northern Cape), have introduced province-wide programmes on ICT integration in their schools before the formal adoption of the e-Education White Paper and are currently well underway with implementing the goals of the policy. The remaining provinces have begun the process of implementation very recently.

A draft ICT for Education Implementation Plan<sup>22</sup> reports that of the 25,582 public schools in South Africa, 5,778 have computers used for teaching and learning and 13,011 have one or more computer for administrative purposes.

Less than 5% of schools can afford Internet connections and are integrating Internet for teaching, learning, communication, and collaboration. The report states further that in the absence of broadband connectivity, the quality of the use of ICT for teaching and learning is low.

Table 3 provides a detailed breakdown of computer access and use per province.<sup>23</sup>

**Table 3: Computer Penetration in South African Schools, 2005**

Province	Total Number of Schools	% Schools with Computers*	% Schools with Computers for Teaching and Learning*
Eastern Cape	6,239	23.0	7.8
Free State	1,842	77.3	25.9
Gauteng	1,897	94.5	78.8
Kwazulu Natal	5,653	43.6	12.0
Mpumulanga	1,863	52.9	16.3
Northern Cape	422	91.0	60.4
Limpopo	4,187	41.8	8.7
North West	2,025	67.6	29.7
Western Cape	1,454	97.0	76.6
National	25,582	50.9	22.6

\*Percentage figures have been rounded to the nearest decimal point.

Most schools still struggle to access the 50% discount on Internet services five years after it was first proposed. Schools still don't get ADSL services at discounted rates, and the telcom division that sells wholesale bandwidth has not yet come to an agreement with ISPs to discount upstream bandwidth to them so that they in turn can give discount to

schools.<sup>24</sup> This is corroborated by a draft NDOE report that confirms that the implementation of the e-rate has not been fully implemented due to various interpretations of the Act. The NDOE has initiated a pilot study with the recently established Meraka Institute to develop models for the Educational Network.

More recently, the NDOE announced a tender for transactional advisors<sup>25</sup> to its ICT for Education strategy. The tender document provides a broad overview of a national strategy for the implementation of the e-education policy with targets related to:

- Infrastructure (targeting all schools and support personnel)
- Network connectivity (targeting broadband access to all schools, FET colleges, and district offices in a closed network linked to the Internet)
- Professional development of all teachers, principals, and support personnel
- Curriculum integration
- Research and human resource systems to support the integration of ICT in teaching and learning

Different models of implementation including public private-partnerships, provincial developmental models, and collaboration models are proposed. This suggests that the next few years will potentially witness a significant increase in the rollout of ICTs to schools in the form of public-private partnerships. KPMG has been granted the role as transactional advisor and they are currently engaged in a study involving a wide range of stakeholders, to ascertain the feasibility to roll out a national program for all public schools and FET colleges.

## **Current ICT Initiatives and Projects: Schools**

South Africa has a host of dispersed and unco-ordinated programmes and projects that promote education through the use of ICTs at various levels of the education system, particularly in the formal schools sector. A study by SchoolNet South Africa (2002) lists 34 different programmes and projects in the schools sector. Since then a few have fallen by the wayside and some have tended to collaborate more closely. The need for co-ordination remains.

Some of the individual government departments of education have had their own provincial strategies, particularly in the schools sector. In view of the new implementation strategy underway, the NDOE is set to play a stronger supportive role to PDOEs.

The major programmes in the schools sector currently underway in South Africa are listed below while Appendix A provides names of additional projects in operation.

### **Technology Access Programmes**

The predominant large-scale technology access model has been the computer lab

containing between 10 and 20 PCs, networked and sometimes connected to the Internet. Organisations such as OLSET work with an interactive radio model, and Mindset and the Learning Channel utilise a television broadcast platform. Mindset also makes use of print, computer-based multimedia and satellite data-cast platforms as complementary to the computer labs. The NEPAD e-Schools Demonstration Project also used the computer lab model in conjunction with the establishment of a media lab which includes a television and a “health point” – a computerised kiosk providing health content. Whilst useful, the computer lab model has also proven to be spatially and time-bound. Alternative solutions using mobile devices such as laptops for teachers, piloted by Intel and cellular phones piloted by the Meraka Institute and Mindset. These have not as yet reached rollout on a significant scale..

### ***E-Schools’ Network***

Formerly known as the Western Cape Schools Network, the e-Schools’ Network was founded in 1993 by a group of teachers who understood the importance of e-mail in education. The original 10 schools supplied with services has now grown to 1,700 schools countrywide

E-Schools’ Network is a non-profit, self-funded organisation that provides the school and FET college community in South Africa the following:

- Connectivity and communication solutions, which are negotiated annually with Internet service providers to bring best-priced quality services to schools
- Call centre support tailored to the unique needs of the school and FET college environment, probably the only call centre that makes more outgoing calls than incoming
- Consultancy and training support service in educational technology, with a particular focus on providing and sustaining connectivity and on-line communication services in schools
- Project development and management on behalf of a wide range of clients, especially where e-Schools’ Network is able to grow ICTs in educational communities that are in need.

Its e-mail service, SchoolMail, which works on any operating platform, creates a mailbox for each learner and educator in a school for less than R1000 (about \$143 USD) per annum. They also run an educational conference that creates a platform for educators to showcase their unique approach to curriculum-integrated ICTs and to share these insights with their fellow educators. The organisation serves as country co-ordinator for a programme involving volunteers from the Belfast Unemployment Resource Centre (Northern Ireland) to spend time in schools by fixing computers and installing software over a four-week period. Any profits made are channelled back into projects at schools to grow the number of schools who have access to ICTS in education.

E-Schools’ Network has been one of the few institutions that has lobbied in support of

the implementation of government's e-rate policy.

For more information: [www.esn.org.za](http://www.esn.org.za)

### ***Gauteng Online***

Gauteng Online is the leading technology access programme in schools in the Gauteng province. It is a programme of the Gauteng provincial government through its Department of Education. The programme's access model involves establishing a computer laboratory with 25 work stations, Internet and e-mail access, to be used for curriculum delivery in all Gauteng schools. The main goals of the programme are to:

- Contribute towards building the human resources capacity of the province and the country through the provision of quality education
- Contribute towards stimulating positive economic activity in the country through the creation of a strong local ICT industry that has a capacity for ICT development and innovation
- Enhance the efficacy of government for improved service delivery and a better life for all
- Position the province at the cutting edge of change through technological innovation
- Bridge the digital divide

In developing these outcomes into a coherent programme, the Gauteng Department of Education worked in partnership with companies like Accenture, KPMG, and Ernst and Young with whom it invited major companies in the South African ICT industry to participate in a pilot project to design the most suitable educational solution for Gauteng schools. Seven consortia were assembled in 2002-2003 to design, build, and run end-to-end solutions for a range of Gauteng schools. Some of these were successful in a later tender process while others were not. To date Gauteng Online has reached an estimated 1,200 schools with PC labs.

For more information: [www.gautengonline.com](http://www.gautengonline.com)

### ***Khanya Project***

The Khanya Project, established in 2001, is one of the first dedicated provincial government programmes in South Africa to address the shortage of educator capacity and the need to deliver curriculum to schools through the innovative use of ICTs. Its ambitious goal is to have every educator in every school of the Western Cape empowered to use appropriate and available technology to deliver curriculum to each and every learner by 2012.

The Khanya Project is modelled as a programme of projects, which considers the diversity of the schools in the province and their varying contexts and resource bases. The programme considers two development phases. The first involves establishing a dedicated space, room, or lab where the technologies will be installed together with the educational software, Internet connectivity, and security. The second phase focuses on

the educational use of the technologies and includes training of educators in the use of ICTs.

To date, the Khanya Project has delivered PCs and provided network infrastructure and training to 613 schools, while another 241 schools are in various stages of implementation (from the basic identification as a Khanya project school, to the final stage of training network administrators). They have provided almost 24,000 computers to these schools (just over half have been funded by Khanya or its donor partners and the rest have been procured by the schools themselves), about 16,000 educators are being trained. Over 500,000 learners are already reaping the benefits of the project.<sup>26</sup> In 2007, the project will also focus on rolling out to primary schools in the province with an initial target of reaching 200 schools.

Core funding for the project is provided by the provincial government of the Western Cape. Between 2001 and 2006, a total of R104 million (USD\$14.8 million) has been committed. In addition, donor organisations and corporate sponsors have contributed approximately R20 million (USD\$2.8million).

Local communities contribute to the establishment of technology facilities in schools on the premise that education is a shared responsibility by the state, local community, and parents. At present approximately 20% of all costs are carried by the community. In turn, the facilities are made available to communities to enhance adult learning and, in particular, computer literacy.

The Khanya Project has won a number of awards for its successful achievements.

*For more information:* [www.khanya.co.za](http://www.khanya.co.za)

### ***Meraka Institute***

The Meraka Institute, recently established as part of the Centre for Scientific and Industrial Research (CSIR), focuses on three key areas:

- Human capital development in ICT forming a critical thread throughout the Institute's activities and ensuring continued development, growth, and sustainability
- Innovation in ICT leading to applications that address development challenges facing South Africa, the continent, and the developing world, thereby directly contributing to addressing the challenges faced by the second economy.
- Advanced technical research enabling indigenous ICT leadership through a critical mass of high-quality research and development

The Meraka Institute has an emerging ICT in Education Research Group that directly supports the South African national Department of Education's e-Education White Paper and has two major research and innovation areas: the formal application of innovative ICTs to support teaching and learning in schools and a more informal approach of creating hands-on exposure for children aged three to 18 to science and technology

careers. Examples of specific research topics within the group include:

- Application of mobile technologies in collaborative formal and informal learning environments
- Application of gaming and blended media environments to support formal and informal learning activities
- Design of innovative, graphical learning environments for children
- Assessment and evaluation techniques for measuring learning outcomes resulting from ICT interventions in the educational domain
- Use of multimodal technologies in child-computer interaction environments
- Design and development of physical/tangible learning objects (“intelligent e-toys”)
- Use of alternative learning devices and technologies to support education in a developing world context

For more information: [www.meraka.org.za](http://www.meraka.org.za)

### ***Microsoft Schools Agreement and ASTIC***

In 2002, the Minister of Education, and Microsoft South Africa signed an agreement to provide all government schools perpetual free access to the use of selected Microsoft software. The agreement was estimated to save the government up to R100 million per year. The offer covers all PCs located within the school as well as home PCs belonging to full-time teachers. Schools will be licensed on an annual basis. The only requirement is that they ensure that the software is used solely for educational and teaching purposes and that it is not sold or illegally copied.<sup>27</sup>

Microsoft’s Partners in Learning programme also recently established an African Schools Technology Innovation Centre (ASTIC) in Troyeville, Johannesburg, which serves as a centre for the provision of information, training, and equipment for teachers in order to encourage their innovative use in teaching and learning. The ASTIC also serves as a virtual gateway by showcasing innovative technology, processes, and educational pedagogy available and by providing access to a network of experts worldwide.<sup>28</sup>

For more information: [www.microsoft.com/south\\_africa](http://www.microsoft.com/south_africa)

### ***NEPAD eSchools Initiative***

The New Partnership for Africa’s Development (NEPAD) eSchools Initiative is a multi-country, multi-stakeholder, continental initiative that aims to impart ICT skills to young Africans in primary and secondary schools and improve the provision of education in schools through ICT applications and the use of the Internet. The first phase of the initiative is a Demonstration (Demo) project that is being implemented by the private sector partners.<sup>29</sup> The objectives of the Demo project are to:

- Determine typical e-school scenarios and requirements in various circumstances in Africa
- Highlight the challenges inherent in a large-scale implementation of e-schools programmes

- Monitor the effectiveness of multi-country, multi-stakeholder partnerships
- Determine “best practice” and exemplary working models for the large-scale implementation of the initiative, which aims to equip more than 550,000 African schools with ICTs and connect them to the Internet
- Demonstrate the costs, benefits, appropriateness, and challenges of a satellite-based network
- Demonstrate the costs, benefits, and challenges of ICT use in African schools

The Demo Project has been implemented in 6 secondary schools in each of 16 countries across Africa through partnerships that involve private sector consortia. South Africa is one of the 16 countries where the Demo Project was co-ordinated by a dedicated country liaison person based at the National Department of Education. Cisco, Hewlett Packard, and Oracle are three companies who formed consortia to support the Demo Project in six South African high schools where the typical model involved fitting each school with a lab comprising approximately 20 PCs, a server and a printer, and a media lab. Teachers at the six schools received training and learners have subsequently used the PC labs in the classroom.

*For more information:* [www.nepad.org](http://www.nepad.org)

### ***Shuttleworth Foundation***

Established in 2001 by entrepreneur Mark Shuttleworth, the Shuttleworth Foundation promotes and supports programmes in education, technology, and open content in South Africa. One of its major achievements is the production of the Freedom Toaster, which is a self-contained, computer-based, kiosk preloaded with free digital products including software, photography, music, and literature. The Freedom Toaster project began as a means of overcoming the difficulty in obtaining Linux and Open Source software due to the restrictive telecommunications environment in South Africa, where the easy downloading of software is not possible.

*For more information:* [www.shuttleworthfoundation.org](http://www.shuttleworthfoundation.org)

### ***TuxLabs***

TuxLabs was initially an in-house initiative of the Shuttleworth Foundation and is now a proprietary company that promotes the establishment of computer labs networked on a thin-client solution based on the use of open source software. There are reportedly 208 schools fitted with the Tuxlab model in South Africa.

*For more information:* [www.tuxlab.org.za](http://www.tuxlab.org.za)

### **Teacher Professional Development and Training**

The National Department of Education has developed a new framework for the professional development of South African teachers as well as guidelines to enable teachers to use ICTs. Presently, a few significant programmes on teacher training, professional development and ICT integration, stand out in South Africa. SchoolNet South Africa (SNSA), one of the most established and reputable non-government

organisations (NGOs) on ICTs in education in South Africa, has evolved over the past 10 years as the leading agency in the delivery of its own programme, the Educators Development Network (EDN), and as the national agency in the delivery of two multinational teacher development programmes, Microsoft Partners in Learning and Intel Teach to the Future. There are also university-based programmes such as the Tshwane University of Technology's specialisation on computer applications technology and information technology, and the University of Kwazulu Natal's Advanced Certificate of Education (ICT Integration) for teachers with the University of Johannesburg using Intel Teach as part of its B.Ed. Course, and the University of Pretoria using Intel Teach in its PGCE course. The University of Fort Hare and Central University of Technology in the Free State use Intel Teach as Staff Development, and the latter is about to use the Intel Teach programme as part of a yet-to-be-determined qualification.

### ***SchoolNet South Africa's Educator Development Network (EDN)***<sup>30</sup>

EDN is an innovative ICT development programme that guides online communities of teachers to learn with and from each other. It is an online learning model that includes introductory training, materials comprising 20 different modules, virtual communities of up to 20 teachers, mentor support for groups and individuals, tracking and archiving through an established database, a Web portal of resources for teachers and recognition of teacher progress by means of a certificate for those teachers who complete six introductory modules and credits towards an Advanced Certificate of Education offered by the University of Kwazulu Natal.

A French version of the EDN model has also been developed in partnership between SchoolNet South Africa and SchoolNet Africa including the training of dedicated teacher mentors located in francophone West Africa.

SNSA has trained approximately 7,000 teachers through its EDN programme, over 20,000 teachers through 1,000 facilitators at 1,000 different schools on the Intel Teach programme, and 7,882 teachers on the Microsoft Partners in Learning programme.

### ***Microsoft Partners in Learning (PiL)***<sup>31</sup>

Microsoft PiL is a global initiative that was launched in September 2003 to target countries and educational institutions that fall into the poorest categories of the World Bank's income index. Microsoft established partnerships with local institutions on the implementation of a global ICT in education programme tailored to local contexts, from capacity-building to direct teacher training. In South Africa, the PiL programme partnered with SchoolNet South Africa in the localisation of face-to-face teacher-training materials and delivering the training in schools. These training programmes include basic ICT skills for teachers, ICT integration, ICT leadership for education managers, 21st century school leadership, peer coaching, and a student helpdesk. To date, the programme has reached more than 8,600 teachers and Department of Education officials.

### ***Intel Teach***<sup>32</sup>

Intel Teach is a worldwide effort to help both experienced and pre-service teachers



integrate ICT into teaching and learning to develop learners' higher-level thinking skills and enhance learning. As part of the global Intel Innovation in Education initiative, a multi-million dollar effort to help realise the possibilities of science and technology in education, this programme is designed to prepare today's educators and learners for tomorrow's demands. Participating educators receive extensive training and resources to plan projects that promote effective use of computers and the Internet in the classroom. Intel Teach is one of the official professional development programmes of SACE (South African Council for Educators).

### **Digital Education Content**

There are a limited number of local programmes and organisations committed to the development of digital content for use in schools. The models for digital content development often come from imported curriculum content of a proprietary nature that would be localised and adapted for a South African context. LearnThings and Intel's Skool.com programmes are examples. On the other hand there are digital curriculum programmes that are locally produced and directly aligned to South Africa's National Curriculum Framework. These would include Mindset and the Learning Channel. A few programs have also opted for Creative Commons licensing and the promotion of open education resources.

#### ***Mindset Network***

Mindset specialises in the creation of open digital education content licensed under the Creative Commons in the health, livelihood, and education sectors. Its main focus is to source and create electronic content focused on national policies and curriculum frameworks and promote the pedagogical use of its content in primary and high schools, technical and vocational institutions, and clinics and hospitals throughout South Africa and Africa. Content is developed in multiple formats (video, print, computer based multimedia) and is distributed via multiple platforms (satellite datacast, DVDs, broadcast via two television channels, Web, and soon mobile devices). Mindset also includes the promotion of technology access, teacher training and development, training of health care practitioners, research, monitoring and evaluation as a comprehensive solution to schools, hospitals, and clinics.

Mindset's track record includes the development of more than 200 hours of school education and 80 hours of health video content with more than 600 hours of content available in its archives. Mindset has also successfully rolled out to 1,500 schools and 300 health clinics and hospitals across South Africa. Its programme for secondary schools is referred to as Mindset LEARN and its primary school programme is called Mindset CABANGA. Mindset also has a pan-African mandate and is currently working closely with the Kenyan Ministry of Education and the Kenyan Institute of Education in the development of local contextually relevant content and teacher training for 21 Kenyan teacher-training colleges.

Mindset's partners include government, corporations, donor and development agencies, and foundations. Mindset's founding partners sit on its board of directors.

*For more information:* [www.mindset.co.za](http://www.mindset.co.za)

### ***OLSET***

The Open Learning Systems Education Trust (OLSET) has since 1992 been designing, developing, and implementing audio and print distance education programmes that reach directly into the classrooms. OLSET specialises in developing, testing, evaluating, and implementing a participatory method of teaching and learning second-language skills. The OLSET team consists of specialists in curriculum development, teacher development, open and distance learning, radio script writing, audio production, graphic arts, print production, and distribution. More recently, OLSET has embarked upon audio-visual production to enhance its in-service teacher development and support strategy.

Today, OLSET works in close partnership with the provincial Departments of Education in South Africa, primarily to:

- Develop, strengthen, and support learner-centred teaching skills among the country's primary school teachers, consistent with the pedagogy of the new constructivist curriculum
- Produce and deliver high-quality audio and integrated print support materials to learners and teachers, especially those in poorly resourced schools located in disadvantaged urban and remote rural communities across the country
- Design, produce, and broadcast interactive radio instruction programmes through the public broadcaster (SABC) effectively offering all teachers easy access to much-needed daily classroom support, regardless of distance and geographical location
- Deliver new curriculum content through use of appropriate ICTs enhancing equitable access for marginalised rural classrooms without compromising the quality of instruction and supportive print materials
- Ensure children attain the competent English language skills necessary for understanding concepts in science, mathematics, and other learning areas at senior primary grades
- Ultimately assist governments and development agencies to facilitate replication of this affordable, high-impact, learner-centred methodology, especially in Africa and developing countries further afield.

*For more information:* [www.olset.org.za](http://www.olset.org.za)

### ***Thutong Portal***

The Department of Education, in collaboration with provincial Departments of Education and other stakeholders, developed a National Educational Portal called "Thutong." The portal aims to provide access to a wide range of curriculum and support material that are contextually relevant to South African learners, educators, education managers/administrators, and parents, and which are quality assured by experts field. By August 2006 there were 15,843 registered users and 18,535 content resources tagged to the National Curriculum Statement on the portal.

*For more information:* [www.thutong.co.za](http://www.thutong.co.za)

## Current ICT Initiatives and Projects: Higher Education

While references to ICTs in higher education are made in a host of historical policy documents on higher education, these policies are not co-ordinated and South Africa does not have a coherent policy that promotes ICTs in higher education explicitly. South Africa's 24 state-funded tertiary institutions and private institutions do, in varying degrees, have policies, strategies, or programmes in place related to ICTs. Cerniewicz, Ravjee and colleagues<sup>33</sup> provide a taxonomy of institutional policy approaches adopted by South Africa's state universities which range from formal explicit policies on ICTs to the incorporation of ICT in existing policies to no policy frameworks to those who have structures in place but which are not supported by policy frameworks. They also point out that the use of technology is defined more by the nature of the institution than by policies, referencing the University of Stellenbosch's E-Campus Strategy incorporating all e-learning business and the University of Pretoria's Telematic Learning and Education Innovation Strategic Plan 2002-2005, which outlines an integrated approach to the quality of teaching and learning practices.

The University of Cape Town has an educational technology policy that outlines an integrative approach to the use of technology, and the University of the Western Cape Integrated Information Strategy (2002) forms the basis of its e-learning strategy as an implementation goal. Some universities, such as the Universities of Fort Hare and Free State, have policies in draft form. An example of a university programme in place is the Tshwane University of Technology's Teaching, Learning and Technology programme.

Some universities affected by the national Department of Education's merger programme, such as the recently formed University of Johannesburg and the University of Kwazulu Natal, have policies that resides historically with the more privileged university before the mergers occurred. And some universities, such as like the University of Witwatersrand, have no policy framework.

### *The AVOIR Project*

The African Virtual Open Initiatives and Resources (AVOIR) Project, initiated by the University of the Western Cape (UWC), is a collaborative effort among several African higher education institutions. It attempts to create educational and business opportunities that contribute to the development of Africa through Free and Open Source Software (FOSS) development activities. It has taken an existing e-learning platform application, Knowledge Environment for Web-based Learning (KEWL) that was developed at UWC, and rebuilt it to run on a FOSS platform. The new version of the software, KEWL.NextGen, is based entirely on FOSS and has an innovative modular architecture that is implemented using a model-view-controller (MVC) design pattern that offers great flexibility to adapt the framework for any purpose. It also has unique features like the support of off-line authoring of content, active mirroring, and instructional design capabilities.

For more information: [www.avoir.uwc.ac.za](http://www.avoir.uwc.ac.za)

### *Sakai SA*

Three South African universities, the University of Cape Town, University of South Africa and North-West University, are collaborating on the deployment and extension of the *Sakai* Collaboration and Learning Environment (CLE).

Sakai is a global consortium of over 100 higher education institutions jointly developing an open source CLE which is used to support teaching and learning, ad hoc group collaboration, support for portfolios and research collaboration.

The South African initiative (known as Sakai SA) involves co-ordinating activities to provide mutual support and shared capacity development initiatives such as the Programmer's Cafe.

For more information: [www.sakaiproject.org](http://www.sakaiproject.org)

### **Current ICT Initiatives and Projects: TVET, ABET, and Informal**

In addition to a very high unemployment rate (estimated at 38.8% if the broad definition of unemployment is applied),<sup>34</sup> South Africa also suffers from a severe skill deficit with strong biases against women and people in rural areas among whom higher levels of unemployment and employable skills shortages are expressed. A recent report by the Human Sciences Research Council (HSRC) shows that South Africa faces a shortage of artisans. Each year, approximately one million young people leave school. Of these only about 19% enter formal further or higher education. The remaining 81% enter the job market armed only with Grade 12 or lesser qualifications. The legacy of apartheid has left a segmented labour market with strong gender and racial biases expressed in the concentration of black and women workers in the lower-paying, informal, and less skill-intensive echelons of the occupational hierarchy. South Africa also has a very high functional illiteracy rate among adults.

There is no comprehensive ICT policy and strategy within this sector. Such policies would be contained within South Africa's existing multifaceted approach to skills development which is embedded in its National Qualifications Framework including the establishment of a National Qualifications Authority, dedicated sectoral skill training authorities referred to as Sector Education and Training Authorities (SETAs), and the inclusion of learnership programmes for young people within firms.

South Africa's skill development strategy also includes intermediate and high skills development in the technical colleges and in higher education, especially at universities and universities of technology, as well as strategic partnerships between government, business, civil society, and local communities to create jobs and reduce unemployment.

Historically, this sector had ICT programmes that focused on establishing telecentres and multi-purpose community centres (MPCCs) as ICT access points for youth, women, and unemployed community members. The MPCCs were targeted as open and distance learning centres that also supplied training in employable skills. A few MPCCs are continuing to play this role.

## **Technical Vocational Education and Training**

### ***ASGISA***

The Accelerated and Shared Growth Initiative for South Africa (ASGISA), mentioned earlier, also focuses on programmes to accelerate the development of skills. These include immediate and medium-term measures to acquire skills needed for the implementation of ASGISA projects and the economy in general. They include:

- The QIDS-UP programme aimed at achieving high levels of literacy and numeracy in the lowest schooling grades
- The Maths and Science Dinaledi programme for 529 high schools to double maths and science high school graduates to 50,000 by 2008
- An upgraded career guidance programme
- A huge upgrading of the further education and training colleges
- The adult basic and education training programme to be ramped up, based on a model developed in Cuba and New Zealand

The other cornerstone of ASIGSIA is the Joint Initiative for Priority Skills Acquisition (JIPSA) which is led by a committee of the deputy president, key ministers, business leaders, trade unionists, and education and training providers and experts to identify urgent skills needs and effective solutions such as special training programmes, bringing back retirees or South Africans and the African diaspora, and drawing in new immigrants where necessary. It also aims to include mentoring and overseas placement of trainees to fast track their development. JIPSA was targeted to have an initial timetable of 18 months, starting in March 2006, after which its future will be reviewed. Understandably a key consideration in the JIPSA strategy is to be a central role for ICTs, although this is not clearly stated.

### ***ICT Charter***

In 2005, after consultation with stakeholders over several months, the Empowerment Charter for the ICT Sector was adopted by firms in the ICT industry. The main elements of the charter include transformation indicators such as ownership, management and control, skills development, employment equity, enterprise development, preferential procurement and social investment.

*For more information:* <http://www.ictcharter.org.za/>

### ***ISETT SETA***

The ICT sector has its own dedicated SETA known as the Information Systems Electronics, Telecommunications Technologies (ISETT) SETA, which seeks to develop South Africa into an ICT knowledge-based society by encouraging more people to develop skills in the sector as a means of contributing to economic growth. The ISETT SETA's mission is to generate, facilitate, and accelerate the processes of skills development for workers at all levels in the ISETT sector by linking future technology

trends with new skills development programmes.

*For more information:* [www.isett.org.za](http://www.isett.org.za)

### **Adult Basic Education and Training (ABET)**

There are a limited number of organisations and programmes that focus on adult basic education and training and, of these, only a few have dedicated ICT programmes integrated within them. Organisations like Project Literacy<sup>35</sup> have run various programmes to promote literacy and numeracy among adults but with no explicit ICT focus. A number of provincial Departments of Education have ABET programmes with dedicated centres for open and distance learning for adults. Many of these are equipped with computer labs and some have Internet access and provide training programmes in the communities. The Bridges to the Future Initiative was launched in 2005 as part of a four-country programme. It aimed to develop tools to improve basic education and literacy, initially in Limpopo Province; develop community learning and technology centres (CLTCs) for lifelong learning and income-generation within MPCCs, secondary schools and other available sites; and develop specialised ICT-supported tools for improving the quality of human development in health, agriculture, HIV/AIDS prevention, etc. Throughout these phases, the BFI intended to utilise ICTs as “enablers” both to deliver resources and to monitor progress and effectiveness of the results. Support of the BFI-South Africa came from the World Bank, USAID, the US Department of Education, and MicroSoft.<sup>36</sup>

### ***Media Works***

Media Works is an established company that specialises in providing National Qualifications Framework-aligned training for (ABET) and learnerships. They provide both face-to-face classes and computer-assisted learning through multimedia programmes with workbooks and facilitator sessions.

Media Works creates customised educational solutions for their clients by integrating technology, courseware, and support services that are designed to meet the specific educational needs of adults. The services provided include initial implementation, consultation, full facilitator training, on-site start-up and training for company staff, and continued assistance and support through telephone calls and on-site visits. The Media Works programmes are currently used as a significant instructional resource by over 100,000 learners across Southern Africa.

Media Works has 10 years’ experience in the industry, a national base of over 2,000 corporate clients, and more than 100,000 active learners.

*For more information:* [www.mediaworks.co.za](http://www.mediaworks.co.za)

### **Informal**

#### ***Digital Doorway***

Considered the South African equivalent of the “Hole in the Wall” project piloted in

India, the Digital Doorway is an initiative of the Centre for Scientific and Industrial Research (CSIR) and the Department of Science and Technology with the objective of introducing computer literacy to rural and disadvantaged communities by making computer equipment and open source software available in computer kiosks. The idea is to allow people to experiment and learn without formal training and with minimal external input. The concept is referred to as “minimally invasive education.” The project introduced a three-terminal configuration with one functioning as a server encased in a blue steel enclosure with vandal-proof metal keyboards, LCD screens, Web cams, speakers, and uninterruptible power supply. One hundred and twenty-two sites have been commissioned to have access to the technology of which 50 have already been rolled out throughout the country.

*For more information:* [www.digitaldoorway.org.za](http://www.digitaldoorway.org.za)

### ***Ditsela***

South Africa boasts a strong trade union movement with dedicated trade union training institutions of which Ditsela ranks among the largest and most established. Ditsela is the creation of the major trade union federations in South Africa: the Congress of South African Trade Unions (Cosatu) and the Federation of Democratic Unions of South Africa (Fedusa). Ditsela’s central objective is to help the labour movement build its capacity to be able to respond effectively to the challenges it faces. To achieve this Ditsela runs programmes in education and training and provides support for organisational development. Ditsela has dedicated programmes aimed at training shop stewards, trade union organisers, and trade union leadership. One of its key projects is Computers in Education, established in partnership with the DGB Bildungswerk, the German Trade Union Federation, which aims to explore how best computers and other forms of technology can be used as a tools in delivering trade union education.

*For more information:* [www.ditsela.org.za](http://www.ditsela.org.za)

### ***Enablis***

Conceived at the 2002 G8 Summit, Enablis was founded by the Canada Fund for Africa, Accenture, Hewlett-Packard, and Telesystem as a ground-breaking private sector-led non-profit organisation that aims to help entrepreneurs in developing countries. Enablis South Africa (Enablis SA) is the first regional hub in the Enablis network, with offices located in Cape Town, Johannesburg, and the Northern Cape. The member network in South Africa has over 150 members, of which close to 30% are women entrepreneurs, 22 full-time employees, and close to 20 business coaches and area specialists that provide support services such as coaching, mentoring, networking, trading, and financing.

*For more information:* [www.enablis.org](http://www.enablis.org)

### ***SANGONeT***

Founded in 1987, SANGONeT is one of oldest NGOs in South Africa involved in the field of ICTs. SANGONeT supports a range of NGOs and community-based organisations with ICT products and services, including training. It established the

SANGONeT NGO Portal in October 2005 in response to the challenges facing the local NGO sector. The portal represents the culmination of SANGONeT's years of experience of working in the online environment. It aims to develop the institutional capacity of the NGO sector by providing information that is intended to support stronger management practices, map NGOs and their activities through one of the most comprehensive databases in Africa, create a community space for civil society exchange, and promote the benefits of ICTs in support of the work of civil society.

*For more information:* [www.sangonet.org.za](http://www.sangonet.org.za)

### ***Women'sNet***

Women'sNet is an NGO that promotes gender equality and justice in South Africa through the use of ICTs by providing training and facilitating content dissemination and creation that supports women, girls, and women's and gender organisations and networks to take control of their own content and ICT use.

Women'sNet services include technology planning especially in creating awareness of free and open source software solutions, training on the strategic use of technology to meet the needs of women, Web site planning and development, and promoting communication and network support. Women'sNet also has a dedicated technology training centre with 18 computers networked on an open source platform.

*For more information:* [www.womensnet.org.za](http://www.womensnet.org.za)

## **Implementing ICT in Education: What Helps and What Hinders?**

It is evident that ICTs are considered a priority at national government policy level. Within the education sector in particular, South Africa has a well-designed policy framework for the schools and FET college sectors, but does not have a comprehensive policy that incorporates higher education, ABET, and technical vocational education and training.

The schools sector takes the lead in the implementation process, with established machinery in the form of National and Provincial Department of Education programmes. There are also evolving models promoting school leadership in the access and use of ICTs in support of learning and teaching. The degree of implementation varies from province to province depending largely on the leadership, skills base, and human resource capability available in the Provincial Departments of Education. Indeed the absence of leadership and human resources to manage and support ICT programmes have proven to be major constraining factor to the successful rollout on a province-wide scale for many provinces. The schools sector is set to thrive and grow over the coming period as the provinces continue with mass rollout programmes to reach all their schools and FET colleges with potential budgetary support from the national Department of Education and the Department of Treasury. ICT access in schools is set to increase along with teacher access, training, and professional development. South Africa's infrastructure and ICT access strategy will potentially leapfrog over the next few years in view of government's ASGISA programme goal to promote broadband access across the country. A number of



municipalities have programmes in place to promote WiMAX and broadband access.

Historically the lack of national co-ordination and facilitation functioned as a major constraining factor as various appendages of government, civil society, and the private sector operated in isolation from one another. However there appears to be gravitation towards collaboration between the Departments of Education, Communication, Science and Technology and Treasury, the private sector, and civil society institutions. A stronger role by the National Department of Education in facilitating between collaborating agencies is likely with a potentially larger number of dedicated staff based at the NDOE to support national co-ordinated and collaborative efforts. The tender released by the NDOE calling for strategic advisors suggests a range of mechanisms that may precipitate central co-ordination across the different components and value chain activities related to ICTs in education. This may include, among other things, a central agency to integrate ICT and curriculum and to monitor and evaluate ICT in education programmes in South Africa.

There are also likely to be greater attention to the role of ICTs in enabling quality learning and teaching and improving performance in schools with a stronger emphasis on monitoring and evaluation, impact assessment, and quality assurance.

As for the integration of gender equality and women's/girls' empowerment in the ICT for education sphere, a recent study<sup>37</sup> suggests that there are limited targeted interventions that promote girls and women in particular. A number of programmes have tended to incorporate gender equality considerations in their project design but there are limited studies that demonstrate the effects of such an approach. The study calls on focused interventions in promoting girls in maths, science, and technology programmes and ICT careers.

Funding mechanisms in support of ICTs in education have ranged from small budgets for ICT infrastructure rollout to dedicated budgets more specifically in support of ICTs for learning and teaching by some Provincial Departments of Education such as in the Western Cape and Gauteng. In the absence of a national budget, schools have also been dependent on donations from parents and the donor and private sector community. The national budget in support of ICT integration in learning and teaching in schools is also set to increase, which in turn will support the provinces in their delivery mechanisms.

While the schools and FET college sectors are set to strive, the other sectors of the education system have significantly less co-ordinated leadership and support. A national education system-wide, co-ordinated effort that encourages both the cognitive development of South Africa's youth and their employability and skills development through ICT-enabled lifelong learning, remains a critical challenge given South Africa's highly skewed youthful population.

**Appendix A: Additional Initiatives**

<b>Project Title</b>	<b>Project Description</b>	<b>Partners</b>	<b>Managing Agency</b>	<b>Geographic Scope</b>	<b>Web site</b>
Community Education Computer Society (CECS)	NGO promoting access to training on ICTs in southern Africa	OSISA	CECS	Southern Africa	<a href="http://www.cecs.org.za">www.cecs.org.za</a>
ICDL Foundation	Certified courses based on an end-user standard on ICTs training	Tuxlabs	Computer Society of South Africa	National and Africa	<a href="http://www.icdl.org.za">www.icdl.org.za</a>
Computers for Kids	Proprietary content based on UK curriculum localised for South Africa	Tuxlabs		South Africa and a few African countries	<a href="http://www.computersforkids.co.za">www.computersforkids.co.za</a>
Education Development Support Centres	Community-based PC labs to support various community groups with many based at schools	North West Provincial Department of Education, Royal Netherlands Embassy	North West Department of Education	North West Province	
Edupac	Education management information system products to schools	Tuxlabs	Edupac Pty Ltd	South Africa	<a href="http://www.edupac.co.za">www.edupac.co.za</a>
Dinaledi	Promotes improved performance in math and science	Various private sector and NGO partners	National Department of Education	National	
Telkom Schools	Promotes access to ICTs, content and training to South African schools	Telkom Foundation	Telkom Foundation	National	<a href="http://www.telkomfoundation.org">www.telkomfoundation.org</a>
Linuxchix	Promotes skills in open source software among women	OSISA FOSSFA	South Africa and Africa	South Africa and some African countries	<a href="http://www.linuxchix.org">www.linuxchix.org</a>
Ungana Afrika	Promotes ICT skills support among NGOs	OSISA and Finnish Embassy	Ungana Afrika	South and southern Africa	<a href="http://www.ungana-afrika.org">www.ungana-afrika.org</a>
Computer Aid International	Sources, refurbishes, and	OSISA	Computer Aid International	South Africa and some	<a href="http://www.computeraid.org">www.computeraid.org</a>

SURVEY OF ICT AND EDUCATION IN AFRICA: South Africa Country Report

Project Title	Project Description	Partners	Managing Agency	Geographic Scope	Web site
	deploys PCs to schools and conducts training		southern Africa	African countries	
Digital Links	Refurbishes and deploys PCs to schools and conduct training	Digital Links UK	Digital Links South Africa	South Africa and some African countries	<a href="http://www.digital-links.org">www.digital-links.org</a>
NEPAD e-Schools	Demonstration Project in six schools	eAfrica Commission National Department of Education Cisco Microsoft Oracle	Department of Education	South Africa	<a href="http://www.eafricacommision.org">www.eafricacommision.org</a>
NetDay	Sources, refurbishes, and deploys PCs to schools and conducts training	SchoolNet South Africa	Netday Pty Ltd	South Africa and some African countries	<a href="http://www.netday.org.za">www.netday.org.za</a>
Learning Channel Online		Liberty Foundation	Learning Channel Campus	National	<a href="http://www.learn.co.za">www.learn.co.za</a>
LearnThings	Produces interactive e-learning curriculum materials and offers training related to effective use of these materials.	Sasani family of companies; Microsoft Partners in Learning, Oracle	LearnThings Africa	South Africa and some African countries	<a href="http://www.learnthings.co.za">www.learnthings.co.za</a>
Naledi 3D Factory	Simulation and modelling solutions	UNESCO, WK Kellogg Foundation, andWorld Links	Naledi 3D Factory (Pty) Ltd	National and some African countries	<a href="http://www.naledi3d.com">www.naledi3d.com</a>
Riverbend	Specialises in the design, development, and implementation of education and training solutions	Riverbend Foundation	Riverbend Pty Ltd	National	<a href="http://www.riverbend.co.za">www.riverbend.co.za</a>

Project Title	Project Description	Partners	Managing Agency	Geographic Scope	Web site
Southern African Institute for Distance Education (SAIDE)	Research on ICTs in education in southern Africa and Africa	Commonwealth of Learning, UNESCO, and Open University	SAIDE	National and Africa	<a href="http://www.saide.org.za">www.saide.org.za</a>
Society and Network for Technology in Education through Collaboration (SANTEC)	An enabling network of educational technology practitioners and institutions in southern Africa	Volunteers	SANTEC Secretariat	Africa	<a href="http://www.santecnetwork.org">www.santecnetwork.org</a>
iCommunity	Promotes ICT access and skills training	Formerly HP Mogalakweni Municipality	Mogalekweni Municipality	Mogalekweni, Limpopo Province	<a href="http://www.hp.com/e-inclusion/en/project/mogalakwena.html">http://www.hp.com/e-inclusion/en/project/mogalakwena.html</a>
Ulwazi Project	Broadband e-learning pilot project using a Motorola Canopy Radio Network	Motorola Foundation Meraka Institute Department of Communications Omega Digital Technologies SchoolNet South Africa St Albans College	Meraka Institute	Pretoria But second phase includes Mpumalanga Bronkhurstspuit, Witbank and Middleburg regions	<a href="http://www.ulwaziproject.co.za/">http://www.ulwaziproject.co.za/</a>

## Notes

<sup>1</sup> [www.cia.gov/cia/publications/factbook/geos/sf.html](http://www.cia.gov/cia/publications/factbook/geos/sf.html)

<sup>2</sup> Allais, S. "The National Qualifications Framework in South Africa: A Democratic Project Trapped in A Neo-liberal Paradigm. 2003. SAIDE. <http://general.rau.ac.za/sociology/allais.pdf>

<sup>3</sup> Roberts, J.A. "Outcomes Based Education. Lessons for the Region." *OpenSpace* 1(2) October 2005. [www.osisa.org/files/openspace//1\\_2\\_p41\\_jennifer\\_aisha\\_roberts.pdf](http://www.osisa.org/files/openspace//1_2_p41_jennifer_aisha_roberts.pdf).

<sup>4</sup> Southwood, R. et al. *Assessing Consumer Activity in The Telecoms and Internet Sectors in Africa*. 2006. IDRC. [www.afridigital.net/downloads/IDRCconsumerdftV2.doc](http://www.afridigital.net/downloads/IDRCconsumerdftV2.doc)

<sup>5</sup> "Power, Poverty and the Global Water Crisis." *uman Development Report*. 2006. UNDP.

<sup>6</sup> Education in South Africa [www.southafrica.info/ess\\_info/sa\\_glance/education/education.htm](http://www.southafrica.info/ess_info/sa_glance/education/education.htm)

<sup>7</sup> Ibid.

<sup>8</sup> [http://www.safrika.info/ess\\_info/sa\\_glance/education/update/budget2007-education.htm](http://www.safrika.info/ess_info/sa_glance/education/update/budget2007-education.htm)

<sup>9</sup> Roos, G. Understanding the South Africa Program Context. 2003.

<sup>10</sup>

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