

Chapter Five: Strategic Objectives

ICT professional development for management, teaching and learning

Every teacher, manager and administrator in General and Further Education and Training must have the knowledge, skills and support they need to integrate ICTs in teaching and learning.

- 5.1 The Department of Education must develop a national framework for competencies for educators (teachers, managers and administrators), and the use of ICTs as flexible tools for teaching and learning must be integrated into pre-service and in-service training. This will include legal and ethical issues, evaluation of software and the use of ICTs to address learners who experience barriers to learning. This will require creating an appropriate accreditation within the National Qualifications Framework, revising the Norms and Standards for Educators, and reviewing Department of Education in-service training policies and programmes to enable teachers to understand and use ICTs appropriately.
- 5.2 Standards for professional competency in ICT utilisation at different levels will be developed, considering the following competencies within an outcomes-based paradigm:
- entry - computer literate, able to use computers and teach learners to use computers;
 - adoption - able to use various technologies, including the computer, to support traditional management, administration, teaching and learning;
 - adaptation - able to use technology to enrich the curriculum and use integrated systems for management and administration;
 - appropriation - able to integrate technology into teaching and learning activities, and use integrated systems for management and administration within a community context; and
 - innovation - prepared to develop entirely new learning environments that use technology as a flexible tool, so that learning becomes collaborative and interactive. Technology is integrated as a flexible tool for whole-school development.
- The challenge is for managers and teachers to operate with higher competencies, without falling too much back on the initial ones.
- 5.3 The Department of Education will collaborate with the Education, Training and Development Practices SETA to access the skills levy for in-service ICT training programmes.
- 5.4 Each school will have a dedicated teacher outside the normal staffing ratio to manage ICT facilities and champion the use of ICTs in the school community. This teacher will receive the necessary training and support in learner focused approaches to learning and ICT in an outcomes-based paradigm.

- 5.5 Support in the form of incentives will encourage teachers, managers and administrators to integrate technology into their daily activities and areas of responsibility. This will facilitate technological change, experimentation with new ideas, and risk taking. The Department of Education will, in collaboration with relevant government departments, ascertain possibilities to encourage teachers to purchase computers and access the Internet for personal use.
- 5.6 The level of proficiency in the use of ICTs will become an integral part of the Development Appraisal System and whole-school evaluation.

ICT professional management

- 5.7 To realise the e-Education goal, educational management needs to move beyond the initial stages of ICT planning and experimentation, and make focused capital investments. Educational leaders at all levels (national, provincial, district and institutional) must leverage ICTs as a tool for improved educational performance and reorganise educational institutions accordingly. Ultimately, educational leaders must view ICTs as an essential transformative tool for education and training, and individually promote and support the use of ICTs in his/her institution.
- 5.8 Institutional development plans must incorporate ICT development plans. The plans must address the initial cost of ICTs, infrastructure upgrades, security, recurring costs, replacement costs, maintenance and support. In addition, plans should address teacher development, skills transfer, support, and additional human resource requirements.
- 5.9 Provincial education departments will plan and budget for the appointment of ICT in Education specialists at provincial and district levels and the training of district-level ICT and subject specialists in order to provide ongoing professional and technical support. This needs to be supported by a group of teachers who can provide support in their district.

ICTs-in-Practice Awards

- 5.10 Integral to the strategy of motivating teachers and institutions to integrate ICTs into their daily functions, the Department of Education will continue with its incentive programme for the Most Improved Schools Awards in the category of Technology- Enhanced Learning Award. The aim of this award will be to celebrate excellence in the creative use of ICTs and to inspire learners and teachers to exploit the full potential of this rich and exciting technology. The awards have the potential to inspire teacher to creatively utilize and explore its utilisation appropriately.
- 5.11 Through this incentive scheme, models of excellent practice will be identified and used to develop and promote effective practices in the use of ICTs in teaching, learning and leadership. The award will allow the Department of Education to share good practice with the wider teaching community while rewarding individuals and teams who demonstrate exemplary practice in the use of ICTs in teaching and learning.

The role of higher education

- 5.12 The Department of Education and the provincial education departments will collaborate with higher education institutions to design and deliver in-service and pre-service training programmes for teachers, managers and administrators.
- 5.13 The Department of Education will ensure the inclusion of ICT integration competencies for teachers, administrators and managers in accredited pre-service teacher training programmes delivered by higher education institutions.
- 5.14 Accredited pre-service teacher training programmes will provide students with the basic knowledge, skills and attitudes required to integrate ICTs into subjects of specialisation. This will require that each graduating teacher is able to combine knowledge of the learning process and instructional systems theory with various forms of media and learning environments, to create the most effective and efficient learning experiences.
- 5.15 The training will model the use of ICTs as a mode of delivery, allowing for greater levels of collaboration, inquiry, analysis, creativity and content production.

Electronic content resource development and distribution

The curriculum in General and Further Education and Training must be supported through effective, engaging and sustained resources for teaching and learning (content). This includes software, electronic content and online/offline learning resources. Additional to formal initiatives by the Department of Education, teachers, content developers and administrators will contribute to these resources.

- 5.16 Conventional print media, as well as the use of devices such as conventional radio broadcast and tape recorders, will continue to be used in e-schools and will compliment the use of digital resources. However, the system has relatively under-developed digital teaching and learning resources at present. It is crucial therefore, that an education-industry partnership be developed to enhance innovative, effective and sustainable e-learning resources. The different media should interface, and be seen in harmony with each other as well as being conceptually interlinked.
- 5.17 The Department of Education will initiate the collection and evaluation of existing digital, multimedia material that will stimulate all South African learners to seek and manipulate information in collaborative and creative ways. These resources will be made affordable and accessible to all learners and teachers.
- 5.18 Digital content is critical to e-Education because it can be easily and randomly accessed, adapted and manipulated, and is accessible from many locations. ICTs with access to digital content will be available in educational institutions and public libraries as part of independent learning resources for learners.

- 5.19 Until connectivity has improved and Internet access becomes affordable for all schools, the Department of Education will promote the creation and use of off-line resources and appropriate software.

Indigenous languages

- 5.20 The Department of Education, in collaboration with the Department of Arts and Culture, will promote the adaptation and development of local content into indigenous languages. While there is a large amount of curriculum material and resources available on the Internet, this online content must be evaluated for educational relevance prior to adaptation and possible translation into indigenous languages.

Creating electronic content

- 5.21 The Department of Education will promote the generation of new electronic content that is aligned with outcomes-based education. Priority areas for national rollout include South African history, technology, mathematics, sciences and the biology of, and social behaviour associated with, HIV/AIDS.

Digital libraries

- 5.22 School libraries are currently unable to support resource-based learning in outcomes-based education. The Department of Education will promote the building up of ICT resources within school and public libraries, especially in disadvantaged areas and access to digital libraries. Information available in public libraries, museums and government offices should be made available in digital formats and networked applications.
- 5.23 This strategy will seek ways of supporting the creation and development of digital libraries. This policy will also articulate clearly how that should be achieved.

National education portal

- 5.24 The Department of Education, in collaboration with the provincial education departments, will initiate the development of a national education portal that is linked with provincial and privately owned portals. It will be a distributive tool and a content and information-sharing platform, hosting communications and collaboration applications for learners, teachers, administrators, managers and parents. It will serve as a nucleus for building web-based resources for teachers, learners and the community, making it possible to create new knowledge and add to the existing knowledge base.
- 5.25 The national education portal will require hosting services that will be distributed and decentralised in order to maximise efficiency and minimise duplication.
- 5.26 A group of experts will oversee the content development process of the portal and drive the process.

Information management

- 5.27 The Educational Management Information System (EMIS) will be accessible through the national education portal.
- 5.28 The Department of Education will improve the electronic system for the transfer of management information between GET and FET institutions, and district, provincial and national offices. This will require the identification of national-level reports and the development or procurement of administrative software packages accessible to all institutions.

Access to ICT infrastructure

Every teacher and learner in General and Further Education and Training must have access to ICT infrastructure.

- 5.29 National and provincial hardware and software requirements and rollout targets must be set by projecting the long-term technological needs of South Africa. This will be based on anticipated educational needs and objectives.
- 5.30 At provincial level, the Department of Education will establish a desired level of technology resources (hardware and software) for each GET and FET institution and assess the adequacy of existing equipment and facilities. At the very least, every GET and FET institution will have access to technology in order to:
- manage administrative functions;
 - access electronic learning materials;
 - connect to information sources outside the classroom;
 - communicate with others in and beyond the institutional boundaries;
 - collaborate with others in and beyond the institutional boundaries; and
 - create and add to the knowledge base.
- 5.31 The Department's investment in various ICT initiatives will be safeguarded by adequate IT measures proposed by SITA
- 5.32 National and provincial managers and administrators must plan and mobilise funds for provincial, district and institutional resources to support hardware and equipment installation, as well as maintenance and repair thereof.
- 5.33 The Department of Trade and Industry, in support of the provision of ICTs to and within schools, will review the trade policies for procuring ICT-related goods and services, as well as ensuring balance between (a) reducing import taxes and bureaucratic processes for imports and (b) developing local ICT industries, including pricing and taxation of e-services, technical support specialists, local or foreign-owned computer vendors, computer assembly plants and software manufacturers.
- 5.34 The Department of Education will develop norms and standards for new and refurbished hardware and software for use in GET and FET institutions and

revise it annually. These standards must be consistent with the technical criteria set forth by the Information Technology Acquisition Centre (ITAC) procurement policy and procedures. Criteria for technical appropriateness include:

- technical requirements, including durability and ease of maintenance;
- systems life expectancy, that is, whether the technology under consideration or tendered is obsolete or relatively new;
- inter-operability, or the ability of ICTs to communicate between different tools and platforms;
- acceptable sources of power;
- safety and security of equipment; and
- best practices with regard to technical requirements and sustainability.

5.35 The Department of Education supports the development of refurbished facilities for second hand computers.

5.36 Central to equipping institutions with an ICT infrastructure is the provision of electricity and a physical infrastructure. Although there are ICT provisions that use alternative sources of energy, the Department of Education will work with the Department of Minerals and Energy to prioritise the electrification programme for GET and FET institutions.

5.37 The Department of Education will develop norms and standards for new and refurbished buildings and facilities for the use of ICTs.

5.38 Alternatives could be found where ICTs can not be implemented in institutions. These include:

- Community Centres
- Partnerships with private sector to use facilities
- Public libraries
- Sharing of facilities amongst institutions.

5.39 This policy put more emphasis on interoperability of systems. The greatest challenge is to ensure that the basic hardware used have an upgrade programme set to ensure this interoperability over a long period. This would ensure that the hardware does not become obsolete due to operating speed and failing the optimum utilization requirement as set out in the White Paper.

Equipment inter-operability

5.39 The Department of Education will establish minimum inter-operability standards that do not preclude new or better products, to guide the purchase of hardware, software and other technologies for GET and FET institutions within provinces. Provincial education departments must prepare guidelines for GET and FET institutions and districts for acquisition of equipment, including software, that is compatible with provincial networks. The guidelines will describe how the

provincial education departments will ensure that equipment in GET and FET institutions meets the highest possible level of inter-operability and open system design as per the minimum content and hardware/software inter-operability standards.

Maintenance and refurbishment of computers

- 5.40 The Department of Education will promote and support the establishment of training programmes and small business incubators for the maintenance and refurbishment of computers. This will be done in conjunction with relevant government departments and the providers of further education and training programmes, as well as higher education institutions that have computer science programmes.

Safety and security

- 5.41 The Department of Education will develop norms and standards to ensure the safety and security of ICTs.

5.42

Both skills and development of teachers and communities should include the competency on crime prevention and safety of ICT facilities. .

5.43 This policy advocates for community access to ICT facilities so that community members could be involved in preventing fraud. Vandalism and theft of facilities. Community access to the facilities has the potential of creating an opportunity for schools to derive some revenue. The provincial education departments will develop mechanism in how communities could be involved in playing a central role regarding access, funding, management and supervision of facilities.

Connectivity

Every teacher and learner in General and Further Education and Training must have access to an educational network and the Internet.

- 5.43 The Telecommunications Act 103 of 1996 and amended in 2001, makes provision for the development of a network for education (EduNet) that will connect all institutions to each other and to the Internet through multimedia laboratories. The Departments of Education and Communications will initiate the development of a national education network in collaboration with other relevant government departments. The education network will be designed to serve the goal of universal access for every e-school. The education network will provide high-speed access for learning, teaching and administration.
- 5.44 The Department of Education recognises the need for high-speed, affordable access and alternative means of access instead of dial-up Internet access.

Network security

- 5.45 The Department of Education, in collaboration with the Department of Communications and the State Information Technology Agency (SITA), will develop adequate measures, such as firewalls and virus protection software, to protect the security of network resources and to protect users. The Department of Education will establish standards and develop guidelines for the use of networks and rights management. The standards will address Internet safety and responsible and age appropriate technology use.

Recurring costs for connectivity

- 5.46 The Minister of Communications will determine the formulae for apportioning of universal service funds for the payment of subsidies to GET and FET institutions for the procurement of Internet services and the equipment required to access the Internet, as stated in the Telecommunications Act 103 of 1996 and amended in 2001.
- 5.47 The legislated e-rate, a discounted connectivity rate, is designed to ensure that the cost of basic connectivity is affordable. Government will implement the e-rate. The discounted e-rate will be reviewed, in conjunction with the Universal Service Agency obligations, against the recurring connectivity costs.

Community engagement

Institutions must work in partnership with families and the wider community to ensure shared knowledge about ICTs and extended opportunities for learning and development through ICTs.

- 5.48 Community engagement in ICT planning, implementing and monitoring is crucial for the formation, maintenance and security of an e-school.
- 5.49 The e-school will also act as a hub for multi-purpose services, such as adult continued learning, primary health care and other local government services.
- 5.50 Moreover, community members will aspire to develop community-based small, medium and micro enterprises to provide maintenance and support services for hardware and connectivity to the e-school.
- 5.51 The Department of Education will support such initiatives through management support and collaboration with the ISETT SETA.

Community access

- 5.52 Government will support community access to e-schools. The objective will be to increase opportunities for communities to use e-school resources, develop their computer and Internet skills, and take advantage of services offered through

ICTs. In return the community will support the sustainability of ICTs in the e-school.

- 5.53 e-schools will be encouraged to engage with the local community in order to become centres of community life and obtain support through the community. The local community will be involved in the maintenance and security of e-school ICT infrastructure, as well as supporting e-schools by availing ICT experts, specialists and champions in the community who are willing to volunteer their skills and expertise.
- 5.54 Institutions can avail their ICT laboratories as study support centres for learners and adult learners. Laboratories will have to be safe and supportive environments for after-school and work-related studies. These study support centres will become study environments for learners whose home environments are not sufficiently conducive to study.
- 5.55 The readiness of learners, teachers and communities in terms of the necessary background knowledge as well as their attitudes towards ICT needs to be carefully monitored before implementation can be effectively and efficiently achieved.

Community-based SMMEs

- 5.55 Government will facilitate the establishment of training programmes and small business incubators to develop community-based computer repair and maintenance businesses and other ICT enterprises. This will require co-ordination with government departments and the business sector, as well as higher education institutions and institutions providing further education and training programmes. These SMMEs will provide technical and maintenance support to GET and FET institutions on an ongoing basis.

Research and development

The research and development community must continuously assess current practices, and explore and experiment with new technologies, methodologies and techniques that are reliable and will support teachers and administrators in e-learning and e-administration.

- 5.56 The best way to learn and understand how to improve practices is through research, evaluation, experimentation and collaboration. To this end, Government must bring together teachers, researchers and the ICT industry in an action-oriented research and development forum, to evaluate and develop leading-edge applications for learning.
- 5.57 Research must be linked to practice. The teaching profession has an obligation to play an important role in generating ideas, testing prototypes and implementing strategies. Research for e-learning should be closely linked to other general research on learning. The Department of Education, in collaboration the Departments of Communications and Science and Technology, the teaching profession, higher education institutions and research agencies, will formulate a research agenda on ICTs for e-learning.

Advanced Institute for Information and Communication Technology (AICT)

- 5.58 Cabinet has approved the concept for the establishment of an Advanced Institute for ICT. The AICT will undertake world-class, needs-based and applied research in ICTs, leading to development and innovation for the benefit of the economy, to advance the quality of life of all South Africans and advancement of the region as a whole. The AICT will also contribute to the education and training of high-level ICT knowledge workers through collaboration and partnerships with higher education institutions.
- 5.59 The work of the AICT, through its research and high-level human resource development, will support the implementation of e-learning approaches throughout the education system.