Guidelines
for
Teacher Training and Professional Development in ICT

2007

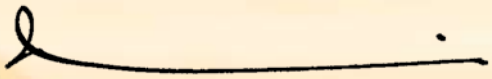
Foreword by the Director-General

The Guidelines for Teacher Training and Professional Development in ICT is one of the initiatives undertaken by the Department of Education to implement the White Paper on e-Education. Information and communication technology (ICT) is fundamental to the implementation of e-education and offers greater opportunities to access learning, redress inequalities and improve the quality of teaching and learning. ICT also makes it possible for teachers to offer learners unprecedented opportunities for development and lifelong learning.

e-Education requires that teachers, managers and administrators in public schools and colleges have the knowledge, skills and support necessary to integrate ICT into teaching and learning. ICT has brought new possibilities into the education sector, but at the same time, has placed more demands on the skills' level of teachers.

The Guidelines for Teacher Training and Professional Development in ICT is a step towards guiding the development of the ICT knowledge and skills of teachers to enhance the educational experiences of learners in the implementation of the National Curriculum Statement. The Framework is an attempt to provide direction in addressing the ICT training needs of teachers and attempts to move away from imposing a narrow vision of the appropriate use of ICT in teaching and learning.

I trust that the Guidelines for Teacher Training and Professional Development in ICT will contribute towards the meaningful use of ICT in education. As teachers become more conversant with ICT and learn to harness its potential, I believe that new perspectives will unfold and these will enrich their own teaching practices as well as the educational experiences of learners.



Mr. D Hindle
Director-General
Date: 23 November 2007

Guidelines for Teacher Training and Professional Development in ICT

Section 1: Background

1.1 Introduction

The White Paper on e-Education, published in 2004, guides the Department of Education's approach to e-education and the integration of information and communication technologies (ICT) into teaching and learning. Among other things, ICT is to be used to create greater access to learning opportunities, redress inequalities, improve the quality of teaching and learning, and provide personalised learning experiences.

The White Paper characterises schools that implement e-Education as institutions that have:

- learners who utilise ICT to enhance learning;
- qualified and competent leaders who use ICT for planning and management;
- qualified and competent teachers who use ICT to enhance teaching and learning;
- access to ICT resources that support the curriculum; and
- connections to ICT infrastructure.

All teachers will thus require the knowledge, skills, values and attitudes, as well as the necessary support, to integrate ICT into teaching and learning, and to support them in their various roles as mediators of learning, interpreters and designers of learning programmes, leaders, administrators, scholars, assessors and subject specialists.

In terms of the White Paper on e-Education, a national framework for teacher development in ICT has to be developed. The framework should provide an understanding of the interrelationship between different components of teacher development in order to assist teachers, managers, policy makers and service providers.

This document sets out the ICT knowledge, skills, values and attitudes needed by teachers to implement the National Curriculum Statement effectively. Competencies for the administration of education will be dealt with separately.

1.2 Approach to teacher development in ICT

By incorporating certain essential principles, this document reflects a holistic approach to teacher development in ICT. It acknowledges that ICT skills cannot be practised in isolation from their context. It also acknowledges that the development of ICT skills and knowledge for teachers should be an integral part of initial and continuing teacher development programmes, as reflected in the National Policy Framework for Teacher Education and Development in South Africa.

The holistic approach to teacher development has the following three dimensions (adapted from the European Union's T3 Core Curriculum for Telematics in Teacher Training):

1.2.1 A pedagogical dimension, which implies an understanding and application of the opportunities of the use of ICT for teaching and learning in a local curriculum context.

1.2.2 A technical dimension, which implies
- an ability to select, use and support a range of ICT resources as appropriate to enhance personal and professional effectiveness; and
- the willingness to update skills and knowledge in the light of new developments.

1.2.3 A collaboration and networking dimension, which includes
- a critical understanding of the added value of learning networks and collaboration within and between partners; and
- the ability to create and participate in communities of practice.

These dimensions are embedded in the national and local infrastructure, culture and context.

1.3 e-Education and implementation of the National Curriculum Statement

The concept of e-Education revolves around the use of ICT to accelerate the achievement of national education goals. These goals underpin the development and implementation of the National Curriculum Statement (NCS), and are as follows:

- **The social transformation of post-apartheid South African society.** The imperative to transform South African society by making use of various transformative tools stems from a need to address the legacy of apartheid in all areas of human activity, particularly education. Social transformation in education is needed to ensure that the educational imbalances of the past are redressed and that equal educational opportunities are provided for all sections of the population.
- **The implementation of an outcomes-based approach to education.** Outcomes-based education is a shift towards a developmental, learner-centred and activity-based approach to learning. It is also designed to promote problem-solving and critical thinking skills, which form the basis of 21st Century skills.
- **The development of high levels of knowledge and skills.** Social justice requires the empowerment of those sections of the population previously disempowered by the lack of knowledge and skills.
- **The integration and applied competence across subjects and fields of learning.** The NCS seeks to promote the integrated learning of theory, practice and reflection.
- **The valuing of indigenous knowledge systems.** Indigenous knowledge systems in the South African context refer to a body of knowledge embedded in African philosophical thinking and social practices that have evolved over thousands of years and which have to be nurtured.
- **Increasing the credibility, quality and efficiency of education in South Africa.**

e-Education strongly supports the principles underpinning the NCS. In particular, it supports the problem-solving and critical thinking aspects of the NCS by developing the ability of learners to:

- apply ICT skills to access, analyse, evaluate, integrate, present and communicate information;
- create knowledge and new information by adapting, applying, designing, inventing and authoring; and
- function effectively in a knowledge society by using appropriate ICT and mastering communication and collaboration skills.

Furthermore, when ICT is successfully integrated into teaching and learning, it can ensure a more meaningful interaction of learners with information. ICT can promote the development of advanced cognitive skills such as comprehension, reasoning, problem-solving and creative thinking, as well as the ability of learners to:

- identify and solve problems and make decisions using critical and creative thinking strategies;
- work effectively with others as members of a team, group, organisation and community;
- organise and manage themselves and their activities responsibly and effectively;
- collect, analyse, organise and critically evaluate information;
- communicate effectively using visual, symbolic and/or language skills in various modes;
- use science and technology effectively and critically, showing responsibility towards the environment and the health of others; and
- demonstrate an understanding of the world as a set of related systems by recognising that problems cannot be separated from their contexts.

1.4 Teacher ICT knowledge, skills, values and attitudes

Teachers are central to the implementation of the NCS. The challenge for teacher development in ICT is to provide teachers with the necessary knowledge, skills and understanding to successfully integrate ICT into everyday educational practices in a meaningful way.

The White Paper on e-Education views ICT development as a process that takes teachers and learners through learning **about** ICT, learning **with** ICT and learning **through the use** of ICT.

Learning **about** ICT refers to exploring what can be done with ICT. This is an operational dimension that refers to skills that are necessary for the use of ICT.

Learning **with** ICT refers to using ICT to supplement normal teaching processes and resources. It involves stepping into a culture and mindset that supports the practice of using ICT for educational purposes, regardless of one's level of expertise. ICT should be used to support new ways of teaching and learning, not simply as an educational extra, but as an effective means to support curriculum delivery and achieve educational outcomes.

Learning **through the use** of ICT refers to utilising ICT to support new ways of teaching and learning. This requires a critical dialogue, analysis among teachers, and research resources to expand teachers' perspectives on the benefits of ICT.

Teacher development should, however, maintain a balance between developing effective teaching and learning strategies and increasing the knowledge and skills of teachers in the use of ICT. This document will focus on maintaining this balance in the components of the framework.

Section 2: Introduction to the Teacher Development Framework

2.1 Definitions

For the purposes of this document, the following definitions apply to the ICT development of teachers:

2.1.1 ICT literacy

The Programme for International Student Assessment defines ICT literacy as "the interest, attitude and ability of individuals to appropriately use digital technology and communication tools to access, manage, integrate and evaluate information, construct new knowledge and communicate with each other in order to participate effectively in society" (Partnership for 21st Century Skills, 2003). ICT literacy is the ability to use practical ICT skills in a particular context.

2.1.2 ICT integration

ICT integration into curriculum delivery is not simply about acquiring ICT competency. It is about the "appropriate selection, use, mix, fusion and integration of many sets of competencies including, but not exclusively, those in pedagogy and technology" (Information and Communication Technology in Education, UNESCO; 2003:18). These competencies, once achieved and contextualised, create new learning environments in which learners take decisions about their own learning while teachers facilitate the process.

ICT integration into curriculum delivery requires understanding from the teacher and requires some changes in classroom practices. It is a multi-dimensional concept that requires a wide base of understanding and an exploration of the many opportunities that ICT offers. It requires creativity and imagination from both teachers and learners, and teachers should believe that learners can also contribute to the learning experience.

Inevitably, this will change the way that teaching and learning take place and the way they are organised and managed. It can offer flexible-learning contexts in terms of how, when and where learning takes place. This can have an impact on the way a school is managed and administered.

2.2 Principles for ICT in teacher development

The following are key principles to be followed in the professional development programmes for teachers:

- Educational goals should be primary. The focus should not be on providing technical ICT skills only, but on the use of ICT to achieve learning outcomes.
- Teacher development programmes should provide teachers with situated/contextualised learning experiences. Programmes should be subject-specific and relevant to the learning areas.

- Teacher development programmes should be needs driven. Programmes should respond to the requirements of subjects such as Computer Application Technology, Information Technology, Geography, Design and Accounting.
- Ongoing support should be consistently available. This includes pedagogic support (particularly from subject advisers), technical support and creating communities of practice.
- Teacher development should be ongoing, due to the changing nature of ICT. Programmes should reflect new technologies and applications.

2.3 Implementation

The White Paper on e-Education requires that the use of ICT, as a set of flexible tools for teaching and learning, be integrated into the Initial Professional Education of Teachers and Continuing Professional Teacher Development. This implies that all teachers should acquire relevant and appropriate ICT knowledge and skills, and be able to integrate ICT appropriately in teaching, learning and administration.

The purpose of this document is to identify the ICT knowledge and skills that teachers require to integrate ICT into the curriculum to support curriculum delivery in specific contexts. The development of teachers' ICT knowledge, skills, values and attitudes is therefore a personalised activity that depends on each teacher's unique ICT experience. This development cannot be a rigid linear progression. The approach should be customised to respond to particular needs, interests and contexts within which teachers will use ICT. Providers should be mindful of individual differences and provide flexible, responsive training programmes and modules.

The following guidelines should be taken into consideration when implementing development programmes:

- There is no single best practice or general recipe for success.
- Teacher development programmes should be flexible in access, modes of delivery and content in order to make learning possible in meaningful and equitable ways.
- Teaching practice, including classroom organisation, will change if ICT is integrated effectively in teaching and learning.
- Teacher development should be managed.
- Programmes need not necessarily provide training in advance of requirements, but can concentrate on giving essential training as the need arises.
- Development programmes should not take teachers out of classrooms during normal school hours, so flexible delivery modes for training will be required.
- ICT development for teaching and learning does not happen in isolation, it also impacts on the management and administration of a school.
- ICT development has an impact on whole-school development. This implies that teachers at a school should develop a community of practice and support one another in developing ICT skills.
- Teacher needs and interests should be the driving force for their professional growth.

2.4 Development levels

The White Paper on e-Education outlines the following ICT development levels that are to be included in the framework:

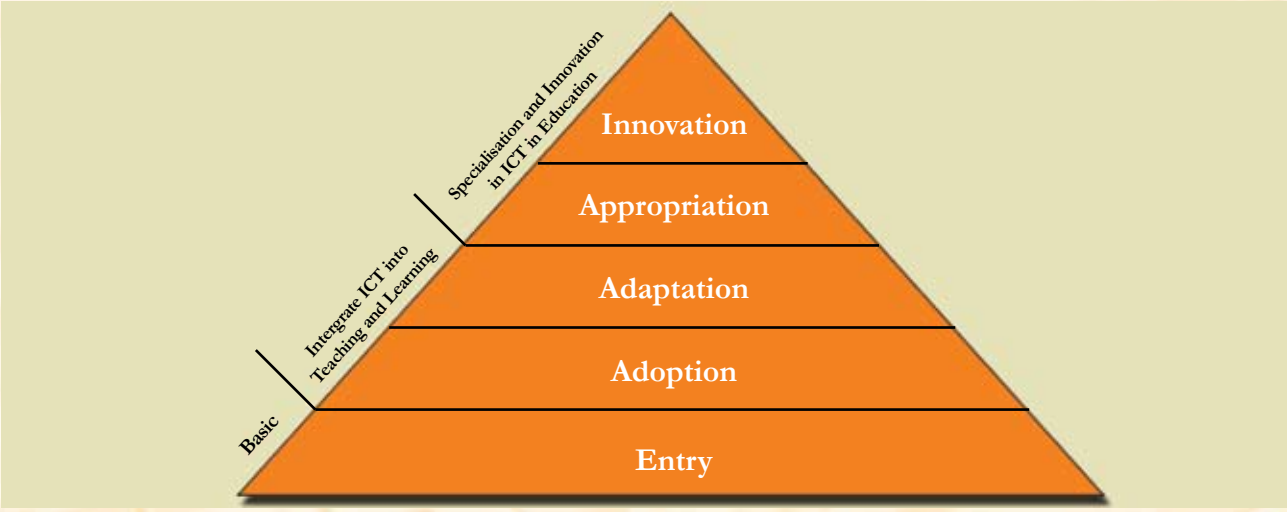
- **Entry level.** The teacher is computer literate and is able to use computers. However, frustrations and insecurities are common in the introduction of ICT. At this level, teachers are likely to lack confidence.
- **Adoption level.** The teacher is able to use various ICT, including computers, to support traditional management, administration, teaching and learning, and is able to teach learners how to use ICT.
- **Adaptation level.** The teacher is able to use ICT to support everyday classroom activities at an appropriate NCS level, assess the learning that takes place and ensure progression. He/she is able to reflect critically on how ICT changes the teaching and learning processes and to use ICT systems for management and administration. Productivity increases at this level.
- **Appropriation level.** The teacher has a holistic understanding of the ways in which ICT contributes to teaching and learning. He/she has an understanding of the developing nature of ICT, and an awareness that it is integral to the structure and purposes of the NCS. He/she has the experience and confidence to reflect on how ICT can influence teaching and learning strategies, and to use new strategies.
- **Innovation level.** The teacher is able to develop entirely new learning environments that use ICT as a flexible tool, so that learning becomes collaborative and interactive. ICT is integrated as a flexible tool for whole-school development through redefining classroom environments and creating learning experiences that leverage the power of technology.

The adaptation, appropriation and innovation phases should not, however, be seen as exclusive descriptors of a teacher's skills level.

The following are the essential skills levels for the integration of ICT into curriculum delivery:

- Basic ICT knowledge and skills. These are the knowledge and skills to use ICT at a basic level, and correspond to the entry and adoption levels of the framework.
- Integrative ICT knowledge and skills. These are the knowledge, skills and values to integrate ICT into the design and practice of teaching and learning, and correspond to the adaptation and appropriation levels of the framework.
- Specialised ICT knowledge and skills. These focus on the transformational use of ICT to redefine the role of the teacher and classroom environments, and correspond to the innovation level of the framework.

The Teacher Development Framework can be presented as follows:



2.5 Targets for initial and continuing teacher development

The following targets are set for ICT skills development for practising and student teachers:

- All students leaving higher education for the teaching profession should have reached at least the adoption level. This means that they should have the knowledge and skills to use a computer and application software. Furthermore, they should have the ability to use various ICT, including a computer, to support traditional management, administration, teaching and learning, and be able to teach learners how to use ICT.
- All practising teachers that have access to ICT should, as a minimum, be trained to the adoption level.
- The adaptation and appropriation levels focus on the knowledge, skills and values to integrate ICT into teaching and learning. At least 60% of teachers with access to ICT should reach the adaptation level and 20% should reach the appropriation level. Continuing professional development and advanced certificate of education programmes should respond to this target.
- The innovation level focuses on the transformational use of ICT to redefine the role of the teacher and classroom environments. At this level, entirely new learning environments that use ICT as a flexible tool for whole-school development and for collaborative and interactive learning are developed. The innovation level is a specialisation level and is suited for study at advanced postgraduate levels. At least 10% of practising teachers should reach this level.

The following approaches should be adopted in ICT skills development for student and practising teachers:

- All higher education institutions should offer compulsory ICT in teaching and learning in teacher development courses (up to appropriation level).
- Students currently in higher education institutions should be fast-tracked to bring them to at least the adoption level by the end of their studies.
- From 2008, all students leaving higher education for the teaching profession should have reached at least the adaptation level.
- All practising teachers who have access to ICT should, as a minimum, be trained to the adaptation level by 2010.
- Subject advisors are to be trained up to appropriation level through a focused intervention from the national Department of Education. Once trained, they will be able to assist teachers to utilise access to computers.

Section 3: Teacher Development Framework

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
	The teacher is computer literate and is able to use computers.	*The teacher is able to use various ICT, including computers, to support traditional management, administration, teaching and learning, and is able to teach learners how to use ICT.*	*The teacher is able to use ICT to support everyday classroom activities at an appropriate NCS level, assess the learning that takes place and ensure progression. He/she is able to reflect critically on how ICT changes the teaching and learning processes and to use ICT systems for management and administration. Productivity increases at this level.*	*The teacher has a holistic understanding of the ways in which ICT contributes to teaching and learning. He/she has an understanding of the developing nature of ICT and an awareness that it is integral to the structure and purposes of the NCS. He/she has the experience and confidence to reflect on how ICT can influence teaching and learning strategies, and to use new strategies.*	*The teacher is able to develop entirely new learning environments that use ICT as a flexible tool, so that learning becomes collaborative and interactive. ICT is integrated as a flexible tool for whole-school development through redefining classroom environments and creating learning experiences that leverage the power of technology.*
1. ICT Professional Aptitude					
1.1 Knowledge, skills, values and attitude to ICT	The teacher is willing and eager to venture into using ICT in his/her teaching and learning. He/she has an awareness of: • the different applications of ICT in education; • basic ICT terminology; • the availability of content from various sources; • efficient search strategies; • health, social, safety and ethical issues.	The teacher believes that ICT contributes to and can change teaching, learning and administration. He/she is able to: • distinguish between the different uses and value of different applications; • understand the value of professional-looking documentation/presentations; • identify critical health, safety social and ethical issues in using ICT in teaching and learning, and apply simple strategies to address these.	The teacher has the open-mindedness, flexibility and vision to explore the potential of ICT and its applications in the curriculum. He/she: • knows when and when not to use ICT to achieve teaching and learning outcomes; • reflects on and adapts teaching strategies in the light of his/her knowledge, understanding and experience of using ICT; • takes into consideration health, safety, social and ethical approaches in using ICT in teaching and learning and is able to transfer the knowledge to learners;	The teacher approaches opportunities to integrate ICT into teaching and learning positively and with confidence, and understands the educational value and potential of ICT in teaching and learning. He/she is able to: • understand the role of ICT in communication, cooperation and collaboration in teaching and learning; • seek out information and opportunities for updating ICT skills; • use ICT features to support teaching and learning; • reflect on practice with ICT in learning, then plan and implement appropriate and manageable change in practice;	The teacher has the confidence, flexibility and vision to develop new learning approaches that use ICT, and understands that ICT is essential for whole-school development.

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
			• provides opportunities for learners to use ICT; • makes informed decisions concerning the use of open-source and proprietary software.	• nurture the development of learner ICT competence in the context of the educational use of ICT.	
1.2 Utilisation of ICT application programs	The teacher is able to: • confidently use basic functions in application programs; • apply knowledge of ICT application programs in administration and lesson planning; • carry out first-level troubleshooting in programs; • use ICT help functions.	The teacher is able to: • use the advanced functionalities of application software to enhance elements of traditional management, administration and classroom activities; • provide help and support to other teachers and learners.	The teacher is able to: • use integrated features of applications, including data analysis tools, data transfer between programs and multimedia presentation programs; • monitor and evaluate learner progress by using ICT application programs; • understand the principles of multi-media selection for presentations.	The teacher is able to create resources by using the advanced features of application programs.	The teacher is able to create new and innovative uses for application programs in teaching and learning and share these in public fora (communities of practice).
1.3 Technical skills	The teacher is able to: • operate a computer and peripherals confidently; • identify ICT hardware resources, e.g. computers, interactive whiteboards, etc.; • carry out first-level troubleshooting in computer laboratories; • identify minor technical problems and communicate these effectively to support personnel.	The teacher is able to: • confidently install a computer and peripherals; • carry out first-level trouble-shooting; • remedy common technical problems; • provide first-level end-user support.	The teacher is able to: • use emerging communication and other technologies for teaching and learning, e.g. interactive whiteboards, hand-held devices, etc.; • keep him/herself up-to-date with developments in the ICT field and recognise the relevance of new hardware and software applications for education; • understand the need for, and operation of, a local area network;	The teacher is able to: • use and manage a range of ICT resources for information access, development and presentation of materials, communication and management; • operate a local area network; • manage data and information security on the network; • set up and manage appropriate technical systems on the school network.	The teacher is able to: • develop, set up and manage integrated ICT systems in the school environment; • teach technical skills to other teachers.

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
			• analyse the technical skills development needs of individual learners; • teach skills as and when they are needed and in the right context; • identify technical and other requirements needed for the effective use of digital content.		
1.4 Accessing and using electronic information and communication resources and ICT skills	The teacher: • has an awareness of the possible uses of the Internet in teaching and learning; • can do simple searches on the Internet; • can identify sources of information and discriminate between them; • can communicate with other teachers using e-mail; • can send and receive information using e-mail.	The teacher: • facilitates interaction between learners through the use of e-mail; • understands the Internet and e-mail communication protocols; • knows how to use the technical features of e-mail and browsing programs for educational benefit; • knows of the major ICT resources available for the subject/learning area; • can download information and use files offline in his/her classroom; • can search, find and evaluate information for use in the classroom; • can share ideas with other teachers using e-mail and attach documents to e-mails; • can participate in discussion groups; • can subscribe to e-newsletters; • can apply digital presentation techniques.	The teacher is able to: • communicate information effectively using a variety of communication modes and tools; • encourage learners to use e-mail for structured educational tasks; • participate in online communities of practice; • find appropriate and diverse electronic resources and use them as an integral part of lessons; • assist learners to do assignments/projects using ICT resources in their tasks.	The teacher is able to: • communicate with other professionals and organisations; • create online discussion groups regarding the use of ICT for teaching and learning; • encourage learners to use e-mail for structured educational situations; • facilitate interaction between learners through the use of e-mail and the Internet; • create information and communication resources and share these with other teachers.	The teacher is able to: • develop collaboration tools; • publish on the Internet; • create and facilitate online discussion groups and virtual communities.

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
2. Integration of ICT into the Curriculum					
2.1 Information management	The teacher: • is able to obtain digital information for his/her use in the classroom; • knows of the social, economic and ethical issues associated with ICT use, e.g. copyright and intellectual property rights, licence agreements, etc.	The teacher is able to: • find relevant information on the Internet for use in the classroom; • critically analyse information found to determine its quality and accuracy; • organise and process information in various formats; • use existing strategies to ascertain the accuracy, validity, reliability and bias of information; • present and communicate information; • understand the social, economic and ethical issues associated with ICT use, e.g. copyright and intellectual property rights, licence agreements, etc.; • identify potential sources of digital content, including education portals, and the cost implications of various sources.	The teacher is able to: • understand the role of ICT as a resource for learner-centred activities; • use a range of information resources to construct knowledge; • develop strategies to ascertain the accuracy, validity, reliability and bias of information; • use ICT for knowledge-building strategies rather than for information transfer only.	The teacher is able to: • use ICT as a resource for higher-level cognitive skills; • effectively use ICT to engage in learning practices that lead to sound information management; • develop learners' knowledge management skills; • structure the use of ICT to allow for greater levels of enquiry, analysis, interest, collaboration and creativity; • use interactive, subject-specific software that encourages simulation, experimental enquiry, decision making, etc.	The teacher is able to: • use ICT to develop critical thinking, informed decision-making, collaborative and experiential learning; • use ICT to develop higher levels of cognitive processing.

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
2.2 Research process	The teacher is able to apply basic ICT literacy skills to research processes in the classroom.	The teacher is able to: • understand social, economic and ethical issues associated with ICT use in the research process; • use ICT to support the traditional research process in the classroom; • evaluate the research process in the classroom using ICT.	The teacher is able to: • integrate ICT into the research process in the classroom; • facilitate a learning process in which ICT is used in research processes in the classroom; • use ICT in his/her own research.	The teacher is able to: • integrate ICT seamlessly into the research process in the classroom; • explore new resources and opportunities for the learners to use ICT in research; • facilitate a learning process in which ICT is integrated into the research process in the classroom and which reflects critical and creative thinking as well as problem-solving; • create research documents with correct web bibliographies and hyperlinks to original URLs.	The teacher: • has a sound knowledge and understanding of the characteristics of ICT and its role in learning; • contributes research findings to online communities.
2.3 Teaching and learning environment	The teacher is able to: • use ICT to create basic documents such as worksheets, tests, etc., and uses these documents in the classroom; • use information obtained through electronic means to enhance teaching and learning.	The teacher is able to: • use various ICT, including the computer, to support traditional teaching and learning; • design a series of lessons making use of ICT to enrich the learning environment; • teach learners how to use ICT; • use new resources and opportunities for teaching and learning.	The teacher: • understands when the use of ICT is appropriate to the teaching and learning strategy being applied; • can adapt traditional teaching methods to integrate ICT into teaching and learning; • is prepared to let learners use ICT even when he/she is not familiar with a particular application/use; • is aware of and models best practices in integrating ICT into teaching and learning; • identifies and uses ICT resources that could most benefit teaching and learning by o evaluating learning resources o achieving learning outcomes o applying teaching strategies in which ICT supports teaching and learning;	The teacher: • has the ability to take a critical view of the personal and educational use of ICT and an understanding of what constitutes appropriate use; • can initiate inter-classroom tele-collaboration; • can maximise the effectiveness of the use of ICT in relation to curriculum objectives; • can reflect on and adapt their teaching in the light of his/her knowledge, understanding and experience in the use of ICT for teaching and learning; • can develop his/her own practices in integrating ICT into teaching and learning; • can plan, deliver and support learning activities involving the use of ICT that are appropriate to the understanding and ability of users;	The teacher is able to: • provide leadership in integrating ICT into teaching and learning; • understand different ICT learning environments, and adapt flexibly to them.

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
			• organises the class and classroom when making use of ICT to achieve learning outcomes; • develops project-based learning skills; • can choose the most suitable resources from a range of generic and subject specific software for use in teaching and learning; • encourages learners to use ICT for presentations.	• is aware of and plans for both the diversity and uniqueness of learners (inclusive education) through the use of ICT in learning; • takes the age of learners into account; • can encourage and demonstrate good classroom practice through the use of ICT, e.g. collaborative working, resource-based teaching and learning, problem-solving, questioning, etc.; • experiments with emerging ICT; • ensures that ICT plays a supportive role, rather than dominating a lesson/ task; • uses ICT effectively to promote collaborative group work; • implements project-based learning; • publishes quality presentations online; • is able to reflect on teaching methods and recognise when they are not being enhanced by ICT.	
2.4 Assessment	The teacher is able to: • create instruments (e.g. tables) for assessment and record-keeping; • use ICT applications to record assessments.	The teacher is able to: • create and use assessment tools like rubrics, test generators and item banks; • register and process evaluation/assessment data and pass this on to the school administration system.	The teacher is able to: • use software applications to create assessment instruments; • monitor, evaluate and assess the use of ICT in teaching and learning.	The teacher is able to: • develop assessment techniques to manage online learning; • evaluate the impact ICT has had on learner performance using open-ended, project-based assessment.	The teacher is able to: • reflect on the effectiveness of ICT assessment strategies; • improve on ICT assessment strategies; • adapt and create new ICT assessment strategies.

Element	*Entry level*	*Adoption level*	*Adaptation level*	*Appropriation level*	*Innovation level*
3. Management	The teacher: • knows that ICT can improve classroom management; • attempts to use ICT to manage classroom activities.	The teacher is able to: • integrate resources found on the Internet in planning lessons; • use ICT to create files and documents to assist in personal planning, lesson planning, as well as classroom administration and management; • apply child online safety measures and teach learners online safety skills; • carry out a needs analysis on ICT infrastructure and skills requirements in their school.	The teacher is able to: • organise ICT resources effectively in the classroom; • plan and implement lessons in which the purpose of ICT is clear, the needs, experiences and abilities of learners are considered and their progress is regularly monitored, and the course of the lesson is taken into account; • effectively integrate ICT into learning, taking issues of access into account; • provide support structures and opportunities commensurate with the needs and abilities of the learners; • monitor and evaluate the progress of learners in using ICT effectively; • plan learning to identify ways of using, managing and assessing ICT.	The teacher is able to: • develop and facilitate the implementation of a school policy on ICT and Internet usage; • design and manage activities so that learners take responsibility for their own learning; • demonstrate ICT leadership skills.	The teacher is capable of specialising in the management of ICT in education.
4. Innovation			The teacher has a reasonable understanding of innovation in ICT in education.	The teacher is able to contribute to educational innovation.	The teacher is able to contribute to educational innovation with his/her in-depth knowledge of the learning process and the role of ICT in this.

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