



Sultanate of Oman  
Ministry of Education

# ICT and Education

## in the Sultanate of Oman

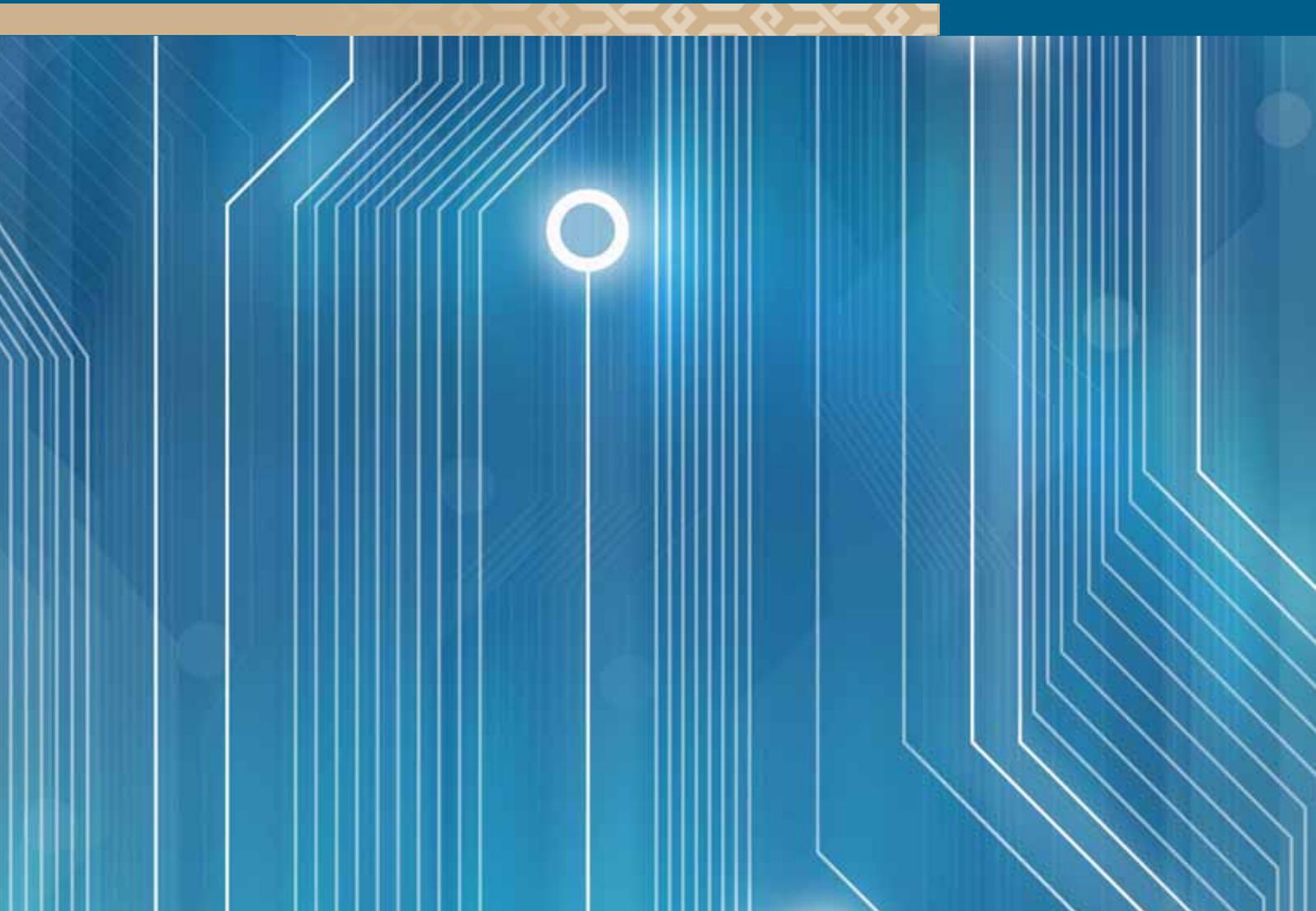








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# His Majesty Sultan Qaboos Bin Said

"We live in an age of science and education. Education and work are our only means of progress and development within the context of our Islamic civilisation."

9th November 1986

"It is essential that Omani society - government and citizens - should realise the extent of the need to be prepared to encounter the challenges of globalisation. We shall do so through the improvement of our national capabilities, basing the economy on the firm foundations of international competitiveness and productivity, enhancing the performance of our institutions, and recognising the value of knowledge, technology and research, which are the keys to progress..."

18th November 1999

**"Technological progress ... is the future and without it there is nothing. Some of us may become the illiterates of the near future because we do not know the language of the computer... we shall do everything we can to ensure that these programmes expand and take their rightful place, because one wants technology. One wants modernisation..."**

2nd May 2000

"We devote great care and attention to the development and reform of education in Oman. Our aims include the raising of standards and updating the curriculum to make it richer and more relevant to the needs of an ever changing world.

These efforts recognise the importance the Sultanate assigns to the development of its human resources, to the fostering of scientific and technological understanding and the creation of an educated population who can make a positive contribution to the development process by dealing confidently with change and new developments."

4th October 2005



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Message  
from His Excellency  
the Minister  
of Education



On behalf of the Ministry of Education, it gives me great pleasure to present this booklet on the use of information and communication technologies (ICT) in education in the Sultanate of Oman. The ministry regards the development of ICT as an integral part of its education reform programme and of its overall aim to create a quality school system for all.

The rapid developments in ICT are viewed with delight and excitement by some, but with confusion and trepidation by others. Whatever attitudes we have, however, none of us can deny that these developments are changing our lives in fundamental ways. If countries are to compete in the globalised world of the twenty-first century, individuals, companies, organisations and governments have no option other than to embrace these new technologies. In recognition of this, an e-government vision has been devised in the Sultanate of Oman which all ministries have been encouraged to implement.

The Ministry of Education has accepted the government's challenge by adopting a comprehensive approach to the use of the new technologies. Although much has been learned from internationally-developed programmes, the ministry's approach has been to customise a solution for local needs.

The ministry believes that the most important application of ICT is through enabling students to have direct use of computers. Computers were first introduced into Omani schools with the start of the Basic Education system in 1998. Since then the number of computers, and schools with computers, has grown dramatically. With the introduction of the Post-Basic Education system in 2007, a number of ICT elective courses were developed in order to ensure that students were provided with the opportunity to choose an ICT course of study which meets their abilities, needs and aspirations.

If students are to derive full benefit from the new technologies, teachers and educational administrators will also be required to keep pace with the latest developments. To encourage and support this process, the ministry has organised an extensive, tailor-made and on-going professional development programme for its staff.

The ministry has created a complete Educational Electronic Portal System to serve as the educational gateway in Oman. The portal is an electronic communication system which provides a speedy transmission for the exchange of information, ideas, experiences and views on educational matters. It acts as a container for all other systems and, as such, includes all related information and services concerned with education in Oman. Its simplicity is that it serves as the entry point and one-stop site for everyone interested in the education process, whether they be a parent, a student, a teacher, an administrator, an entrepreneur, or even another ministry.

The approach adopted by the ministry has recognised that there are two aspects to the use of information computer technology in education and that both of these have to be fully utilised.

- The main focus of the education sector is to enhance student learning. The portal supports this by making innovative and attractive methodologies and teaching tools to enrich the educational process available to both students and teachers.
- An ancillary aspect of ICT application relates to educational support systems. ICT enables information on a range of educational issues (e.g. financial, statistical, resources, staffing and school management) to be easily stored and retrieved and this can help to considerably improve the ministry's management, educational planning and decision-making capabilities.

Both of these aspects are included in the portal. These systems are interrelated with, and supported by, a number of other systems such as an archiving system and a web and e-mail site.

The substantial progress made by the Ministry of Education in developing ICT is a testimony to the enthusiasm, dedication and ingenuity of the ministry's staff. I would like to take this opportunity to thank all those who have been involved, and I feel confident that, with their continued support, we will be able to further develop our ICT systems to meet the evolving needs of our students.

**Yahya Bin Saud Al Sulaimi**

Minister of Education  
Sultanate of Oman





## Message from Dr. Salim Al Ruzaiqi

Chief Executive Officer  
Information Technology  
Authority



**O**n behalf of the Information Technology Authority, I wish to congratulate the Ministry of Education on the considerable efforts it has taken to harness Information and Communications Technology to enhance its services in-line with the e-Oman vision.

It is important to prepare our young people to play an active role in the digital society of tomorrow for the future growth and sustainable development of the Sultanate's economy. The Ministry of Education has certainly made strides in helping to prepare the younger generation of the Sultanate.

The Ministry's innovative and highly successful Educational Electronic Portal System has provided the country with an excellent model on how an electronic one-stop gateway benefits the community at large. We wish the Ministry well with the ambitious projects it has embarked upon.

**Dr. Salim Al Ruzaiqi**

Chief Executive Officer  
Information Technology Authority  
Sultanate of Oman



Part 1

# Developing an ICT Strategy



They will need to be able to access information easily and to assess and analyze what they find.

They will need to be able to synthesize ideas and construct new knowledge based upon consultation.

They will need to have developed a variety of higher order thinking skills.

They will need to be self-starters who are adaptable to change and who possess abilities for independent knowledge acquisition and processing strategies.

They will need to plan with an eye for anticipating potential difficulties.

They will need to be able to make decisions and generate creative solutions to problems.

They will need the ability to manage scarce resources and develop sustainable strategies.



# Citizens of the Future

Citizens of the future require a different set of personal, intellectual and job skills to those required by citizens living in the last century.

Acquiring these abilities and skills will help to prepare our young people to make productive contributions to the culture and economy of the country. It is these types of knowledge, skills and values which employers are seeking in prospective employees.

A photograph of two children, a girl and a boy, wearing traditional Islamic clothing (a white hijab and a white kufi cap). They are looking intently at a computer monitor. The background is a dark blue grid pattern.

They will need to know how to work collaboratively with others in a range of types of groups, from the small task oriented work team to groups interacting at great distances using video conferencing and other communication technologies.





# Global Trends in ICT

Many diverse approaches to technology have been implemented throughout the world and, over the last ten years, the ministry has been monitoring the achievement levels of these approaches. In many countries there is a high level of integration of computers in the curriculum. In others, the focus has been mainly on computer programming and technical skills to the exclusion of curriculum integration. In some countries, distance education is bringing new types of learning to isolated students through radio, television and computers, and, at times, these types of media take on the role of the teacher. In some instances, where trained teachers in specialized subject areas do not exist, distance education represents a lifeline of hope.

Despite these differences in approach, there are some common strategies that are applicable to all countries embarking upon a plan to use technology in education. It is important to realise from the outset that the cost of effective implementation is not limited to that of computer hardware. Specialized educational applications, peripheral devices, furniture, classroom alterations and a supportive and secure infrastructure must all be considered. One of the most crucial aspects of the implementation of a sound ministry plan involves the development of trained teachers who know not only how to operate computers and other technology, but also are experts at how to use technology to help students to learn more easily and more

**In some instances, where trained teachers in specialized subject areas do not exist, distance education represents a lifeline of hope.**

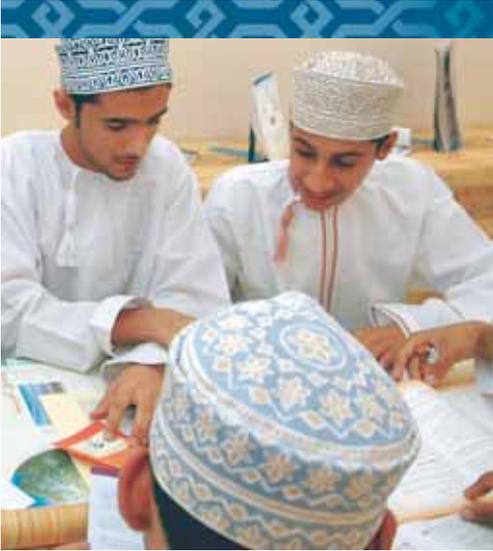


**Planning for ICT must be carried out in a responsible way to ensure that its implementation is not short lived, but sustainable over a period of time.**

effectively. Technology needs to be maintained continuously if it is to be of any use. Five to seven years is generally considered to be a reasonable period for the shelf-life of computers and so, ministry planning needs to include a replacement policy for technology. Planning for ICT must be carried out in a responsible way to ensure that its implementation is not short lived, but sustainable over a period of time.

Countries need to acknowledge their limitations and utilize their scarce resources wisely. Pilot programmes funded by international organizations can be helpful, although they may build expectations within a populace which are too high. Projects which rely on external funds alone are often not sustainable once the initial 'start-up money' runs out. All countries, whether rich or poor, need to work within their own means. Equal access to ICT resources for all students should be a prominent goal.

All technology when first introduced into education tends to be used to do things in traditional ways. It is only when educators become more familiar with the technology and the possibilities which it affords, are more innovative approaches and learning strategies employed. Traditionally the spell checker, grammar checker and thesaurus associated with a word processor can be used in the process of editing and revising a composition. Innovative teachers use these same built-in facilities in creative ways to motivate students to explore word usage, develop more sophisticated communication skills, and focus on the message they are trying to transmit rather than the surface features of the composition. Through exploring the scripting of turtle movement in the LOGO language, students in early grades gain greater awareness of two dimensional space, geometric concepts,



problem solving and general higher order thinking skills. Many teachers are finding that there is an ever-expanding collection of innovative computer uses in education.

Using technology as simply a 'teaching machine' is probably one of the most inefficient and least cost effective uses of technology. The cost of acquiring the number of computers required for all students to access electronic books is usually prohibitive. Moreover, students still require human contact. Good teaching involves the wise use of the available technology. While there are many marvellous 'learning objects' being developed and freely available around the world, the ministry is aware that it must choose how and where to devote its resources most effectively. Links need to be made with the existing curriculum outcomes. Integration strategies need to be developed to ensure that students understand concepts, master skills and develop values

and behaviours that match the established goals of Omani education.



**Teachers are finding that there is an ever-expanding collection of innovative computer uses in education.**



Internet Explorer

## وصف العلاقة

انقر على العبارة التي تعبر عن العلاقة التي تربط بين العمود الثاني والعمود الأول

الأعداد في العمود الثاني ناتجة عن ضرب الأعداد في العمود الأول بالعدد 4

الأعداد في العمود الثاني ناتجة عن جمع العدد 4 للأعداد في العمود الأول

الأعداد في العمود الثاني ناتجة عن ضرب الأعداد في العمود الأول بالعدد 0

Tools

Navigation icons: Home, Back, Forward, Stop, Refresh, Print, etc.



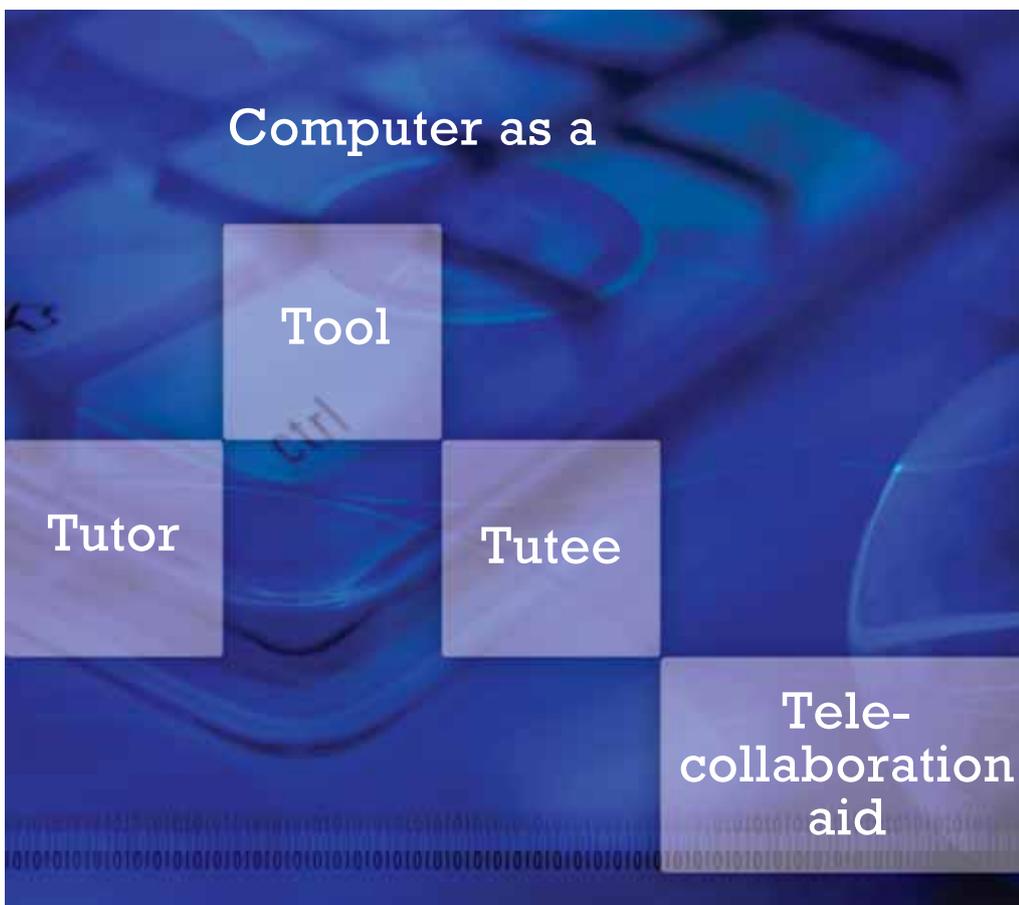
المكتبة العربية

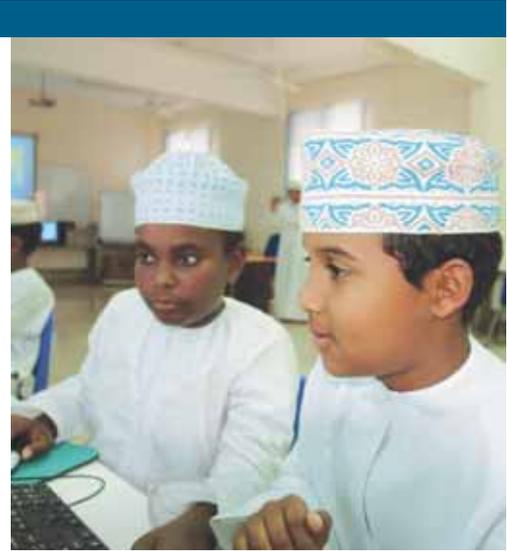


# Global Trends in E-Learning

Electronic learning implies employing information and communications technology systems to enhance student learning. It is not limited to the use of distance learning systems or to the control of what is presented to students in on-screen lessons.

Computer assisted learning can be subdivided into four categories each of which describes the role of computers in relation to the student. In each of these computer assisted learning modes, the focus of control is different. The four categories are:





When computers are used as **tutors**, the student learns from the computer. While there is some interaction between the student and the computer, the computer controls the presentation of material to which the student responds. Computer-aided tutorial lessons fit well into situations where students need to progress on their own with limited teacher supervision. Examples of the use of computers as tutors include:

- simulations
- tutorials
- drill and practise and
- educational games

Computers are used as **tools** when the student takes greater control and chooses an application to perform a task. The most significant use of information technology in schools occurs when students actually use computers the way that adult professionals use computers. They begin to do this when

they use their computers as tools. Drawing, painting, databases, spreadsheets, web browsers, and/or word processing applications are used to access, process, organise, analyse and present data. When computers are used as tools, students have much greater control over their learning. The examples shown in the box on page 23 are merely starting points to a range of possibilities for the integration of computers in the curriculum.

When students use computers in the **tutee** mode, they actually instruct the computer to do things. Student thinking and problem solving skills are authentically challenged when the computer is actually taught by the student. In this way, they are encouraged to develop deeper insights and understandings which they can then transfer and apply to new situations. The experiences offered to students include:

## Integrating Computers into the Curriculum

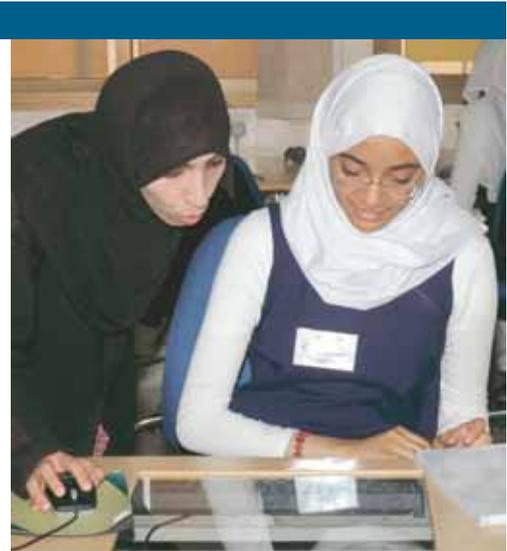
- In the teaching of languages, writing with the aid of a word processor with added features such as spell and grammar check and page layout, helps to remove the drudgery of writing and to inspire young authors.
- In mathematics, deciding which of the variety of different chart forms available within spreadsheet applications to employ helps the student gain a better understanding of the fundamental concepts of data management.
- In science subjects, when students sort and classify experimental data with the help of a database, they are working with computers in the same way as real scientists do.
- Researching a topic with on-line encyclopaedia, CD ROMs and the Internet provide skills for life-long learning.



- Young students in Oman are encouraged to build virtual worlds with Etoys and SimStories using the same educational software environment as students in Brazil, Canada, Germany, Japan and the USA.
- Older students learn to create animations, web pages and to programme what the computer does using advanced programming languages.

Experiences such as these provide students with a valuable introduction to the skills they will need if they decide to pursue careers in programming after they leave school.

During **telecollaboration**, the computer is used to aid communications and facilitate the exchange of ideas locally, regionally or world-wide. Students can:



**The ministry is continually developing and enhancing its e-learning environment.**

- Plan their enquiries using shared information space where they can post their ideas and provide positive and constructive feedback to the ideas of other students. Collaboration may lead to insights that might not have been possible without the benefits of discussion and interaction. Applications such as 'Journal Zone' are used for this purpose.
- Use shared information spaces within a network or over great distances so that text, diagrams, animations, sound and even video can be seen by different groups of students at the same time. Alterations made by a student at one site will be instantly seen by the students at other sites.
- 'Ask an Expert' for advice in an educational forum.

The ministry is continually developing and enhancing its e-learning environment. Classrooms are being linked to the new world of learning possibilities available through Intranets and the Internet. Secondary students who have not come through Basic Education are learning basic computer skills through the International Computer Drivers' License programme. Students with special needs are being provided with customized ICT solutions to aid their learning.

Virtual classrooms are created for students through the use of computer networks and the development of specialized learning materials. Although they are not physical buildings, they achieve the same results. The learning possibilities of students who are disadvantaged either physically or geographically are being increased through the development of virtual classrooms. Through a project with UNESCO, a virtual

library of learning materials is being developed to aid blind and deaf students. Students who cannot attend one of the special schools will be able to access this bank of voice and image enhanced materials over the Internet. When the number of students who choose an elective course at a secondary school is very small, these students can be combined with students at other schools to form a virtual class through distance education.





# ICT in the Ministry of Education

## The importance of information and communication technologies

In 1995 the government of Oman launched a conference “Vision for Oman’s Economy - Oman: 2020” to consider the future direction of the Sultanate's economic and social development. The report emanating from this conference recognised that the globalisation of the world economy would create a great need in Oman for creative and flexible workers who possess high quality scientific and technological skills.

## A national strategy

The government established the **National Information Technology Committee (NITC)** in May 1998 headed by the Minister of National Economy. Following this, the government's Sixth Five Year Plan (2001-2005), which contained several objectives associated with the development of the ICT sector, was approved.

The essence of the vision is to facilitate:

- ICT and scientific developments in the provision of services and data in both the public and private sectors.
- The use of electronic services as the primary mechanism for providing these services and making them available to all.

## Responsibilities of the National Committee for Information Technology

- Formulate a national policy for ICT and establish an implementation strategy which would enable the Sultanate to take full advantage of the numerous opportunities it offers while maintaining a cost-effective approach to programmes and projects.
- Develop ICT programmes, equipment and networks to encourage alternative income sources for Oman's economy.
- Monitor the establishment of appropriate principles, criteria and instructions relating to ICT.
- Adopt national programmes and projects required for the implementation of an ICT policy and forming technical teams to manage the programmes and projects.

The Executive Committee for Information Technology, which is chaired by His Excellency the Secretary-General of the Ministry of National Economy, was established in May 2003. The Information Technology Authority, which has responsibility for monitoring the implementation of the national strategy, was created by Royal Decree in May 2006.

## E-government and a digital society

A digital society involves the integration of digital technologies in home, work, education, recreation and other activities. The plans for a digital society cover infrastructure actions which directly affect the economy and population of the country. E-government is an element of the digital society, but it is only one among many elements.

Electronic government can be defined as "the integrative and effective use of all information and communication technologies to facilitate and accelerate accurate dealings within government bodies, their citizens, the business sector and their employees".

The overall objectives of the national e-government strategy are to achieve sustainable development and to provide for

the efficient, effective and transparent implementation of internal government procedures. With this in mind, the goals of the strategy have been defined in a way which ensure that they not only reflect the needs of government, but also those of Omani society as a whole. The aim is to provide e-government services to all sectors within the Sultanate, starting with individual citizens and reaching out into the business sector.

## National E-Government Strategy

- The infrastructure of the national network.
- The infrastructure of information systems and their integration.
- Plans and strategies for information security and business continuity.
- Drafting legislation to codify and protect electronic transactions.
- Raising ICT literacy among Omani citizens.
- Increasing the number of Omani ICT educators.
- Establishing bodies to support the ICT sector.

In common with international practice, the national strategy recommended that the Sultanate's government should adopt a "path of life" and "life events" approach to providing services which will help users to identify the location of the service they require on the government's web sites. While individual ministries are expected to develop their own ICT structures, the delivery of government services to citizens and business requires coordination between ministries and relevant organisations. To facilitate this, the government has developed partnerships around the concept of "community interest". For example, community interests in the field of education consist of the Ministry of Education, the Ministry of Higher Education, the Ministry of Manpower, the Ministry of Social Development, Sultan Qaboos University and representatives of the private colleges and universities.

## The benefits of e-government and ICT

The application of e-government will help to make processes and procedures within the government sector more efficient and effective. It will enable the public to deal directly with government departments via the internet. This should help to improve the quality of services by simplifying procedures, increasing the speed of response and by

**The aim is to provide e-government services to all sectors within the Sultanate**



**The future well-being of countries will be determined by the way they face up to the challenges and opportunities in creating a digital society.**

reducing errors. It is expected that it will help to reduce expenditure and increase demand for jobs and services. The skills and expertise within government bodies will be developed and this, in turn, will help to attract companies operating at the cutting edge of technology.

All over the world, economies and societies and the way governments' operate and serve their citizens are being changed by ICT. It is no exaggeration to say that the future well-being of countries will be determined by the way they face up to the challenges and opportunities in creating a digital society. Care has to be taken to ensure that all the elements are put in place. For example, the infrastructure of the most advanced electronic government will have little value if citizens do not possess the required skills or economic motivation to access services electronically. It is for this reason that the national strategy in Oman

has emphasised a comprehensive and integrated approach. It is believed that this approach will help to bring about a digital society built upon sustainable development and that this will help to ensure that Oman will be in a position to thrive in the globalised marketplace of the twenty-first century.



# Guiding Beliefs and Assumptions

Some of the guiding beliefs and implicit assumptions which form the basis for ICT education in Oman include the following.

*Information and communication technology literacy has become a necessary part of the set of understandings and skills that students will need as they graduate from school.*

*Professional development of the existing and future teaching staff is a key ingredient for the successful implementation of any information technology plan.*

*Teachers should not think of computers as a separate and new subject, but as just another way in which students can learn the traditional disciplines. The concepts and skills associated with the use of computers will be best learned through meaningful integration.*

*Skills taught in isolation are rarely retained or transferred to new situations.*

*The integration of information and communication technology in subject curricula involves a parallel planning process wherein student learning outcomes in all disciplines need to be considered equally.*

*The use of information and communication technology should, to some extent, be integrated into all subject disciplines.*

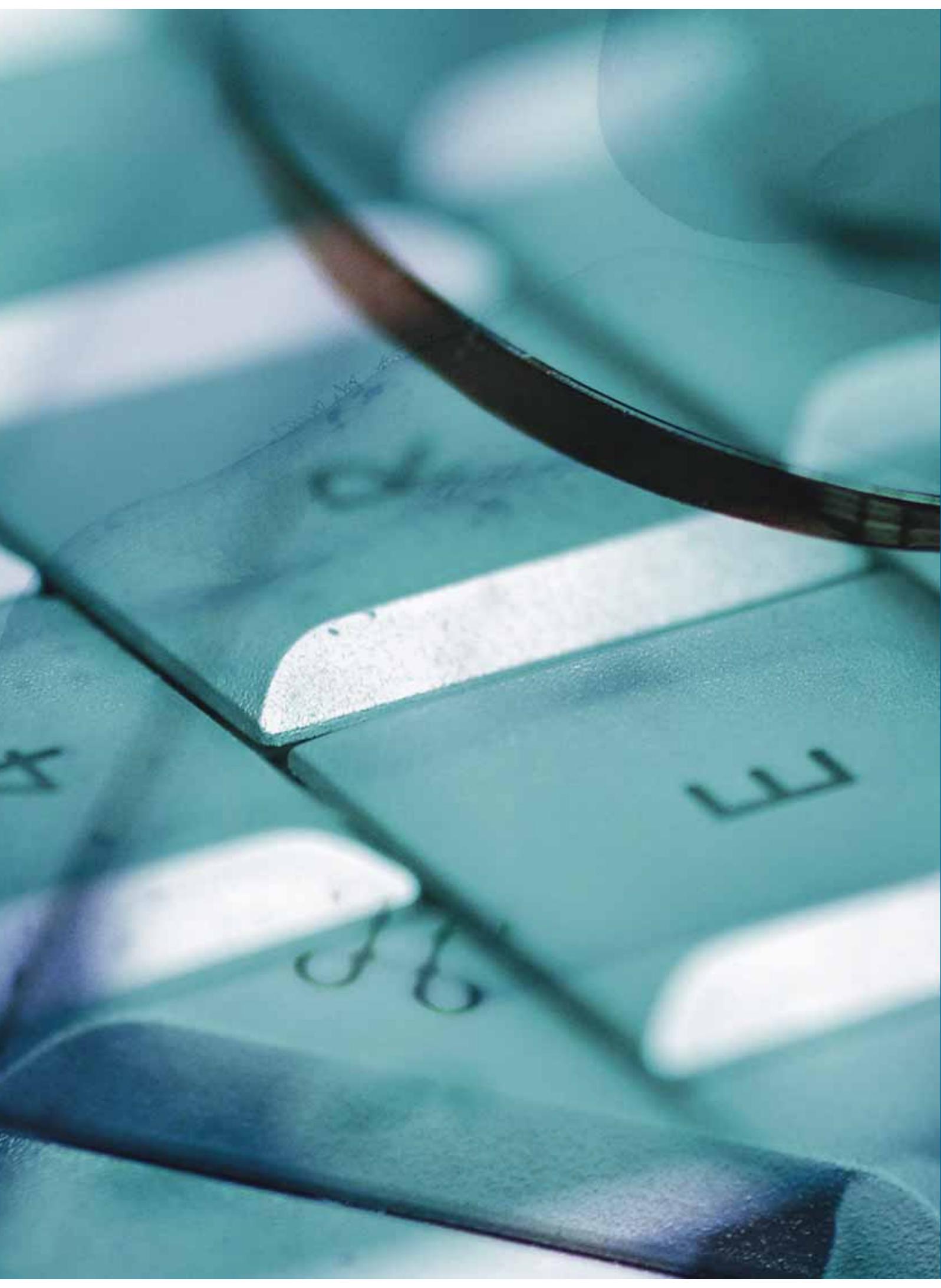
*Software applications appropriate for adult use in a business office will rarely be appropriate for use by students in schools. It is most important that the application software provided for students match their skill level and sophistication of utilization.*

*The ways in which students will actually use hardware and software should dictate the types of hardware and software that are acquired. Hardware and software should not limit in any way the plans for student use.*

*Learner-centred activities best promote the acquisition of knowledge, skills and values. Computer controlled systems where the curriculum designers and/or instructors are isolated from the learners are to be avoided.*

*Computer use in schools must be supported through the adequate allocation of resources, assistance through help desks with technical support and maintenance strategies, a collaborative community of users, curriculum development that supports the existing curricula, and the affirmative actions of local and central administrations.*

*Budget allocations should be divided equally between the tangible computer hardware and the less tangible areas of software, curriculum and user support.*



Part 2

# Implementing ICT





# Gradual Growth of ICT in Oman's Schools

## Basic Education

The aim of the ministry's Basic Education initiative is to replace the present General Education system with a unified education system covering the first ten years of schooling. Basic Education is organised into two cycles: first cycle (grades 1 to 4) and second cycle (grades 5 to 10).

It was first introduced in the 1998-99 academic year in 17 schools. Through a phasing-in programme, the number of schools involved in Basic Education has been gradually rising and, by the academic year 2007-08, 661 schools were involved. This phasing-in programme will continue until it is eventually implemented in all schools.

## Basic Education First Cycle Schools

ICT was first introduced into mixed gender Basic Education first cycle schools in September 1998. Seven computers were initially located in each school's learning resource centre (LRC). All students in grades one to three visited the LRC once a week, while this was increased to two visits a week for grade four students.

Classes were divided in two: one half worked on ICT while the other half was involved in

information literacy activities. Integrating computers with the learning outcomes of other subject areas was a key aspect of the programme. A variety of different types of computing experiences were developed to provide students with a wide range of knowledge and skills.

In 2000, first cycle schools were supplied with eight additional computers and in 2003 computers began to be introduced into

**ICT was first introduced into mixed gender Basic Education first cycle schools in September 1998.**



**ICT was from the very beginning considered as an important part of the new Basic Education programme.**

subject classrooms. Integrated activities were introduced in Islamic studies, Arabic studies, English language, mathematics, science and social studies. Two laptop computers were used in these classrooms as one of the sets of resources through which groups of students rotated.

Learning activities included exploration of new concepts, content-related games, practice exercises, drawing, painting, reading and composition. While some commercial software was employed, most of the activities are created locally by curriculum developers and classroom teachers. The use of computers in the classroom is being expanded in conjunction with special projects such as integrated Arabic studies. Students are encouraged to apply concepts and skills previously learned in the LRC.

## Basic Education Second Cycle Schools

The first batch of second cycle Basic Education schools was opened in the 2001-2002 school year. Second cycle covers grades five to ten and in most cases, boys and girls attend separate schools. Students who had come through first cycle Basic Education began the revised programme for grade five, while students in grade six carried on with the traditional General Education programme.

ICT was from the very beginning considered as an important part of the new Basic Education programme. Every year a new ICT grade level curriculum and support materials were introduced and an ICT curriculum is now available for all grade levels in second cycle schools. Students in second cycle schools have greater access to technology than students in first cycle schools.



While students in second cycle schools receive lessons on information technology in a separate computer classroom, there are no scheduled ICT classes in the LRC. As a result, subject teachers are encouraged to organise class visits to the LRC. At each grade level in second cycle, students have two ICT classes every week. Teachers encourage students to use laptop computers and LCD projectors to make presentations in subject classrooms.

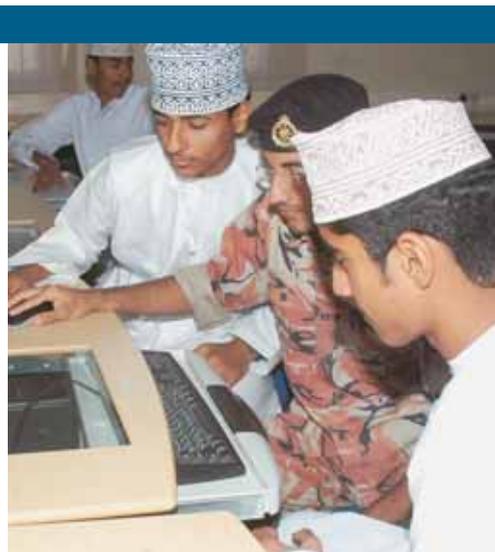
Many of the concepts and skills introduced in the ICT curriculum are complemented by curriculum units in other subject areas. For example, a science unit which deals with simple machines and forces has a culminating activity in which students must apply these ideas to the construction and programming of a robotic vehicle which uses touch and light sensors. In this way the theory of one subject is transferred to meaningful application in another situation.

Collaborating with other students and out-of-school experts is encouraged through dedicated software such as Journal Zone. Troubleshooting strategies for hardware and software are explored. Operating and networking systems are compared. During their final year (grade ten), students select individual and group learning tasks which require them to apply the concepts, abilities and values acquired earlier in the creation of products and presentations.

## General and Post-Basic Education

The International Computer Driver's License (ICDL) programme was introduced to General Education Grade 11 students in September 2004. The ICDL introduced basic skills (e.g. word processing, database,

**Many of the concepts and skills in the ICT curriculum are complemented by curriculum units in other subject areas.**



spreadsheet applications) that will help to prepare students for both the job market and studies at the post-secondary level.

The ICDL programme was removed with the introduction of Post-Basic Education in September 2007. In its place, a number of optional ICT courses were offered to students. Students with special needs, e. g. those who are blind or hard of hearing, are provided with customised ICT solutions.





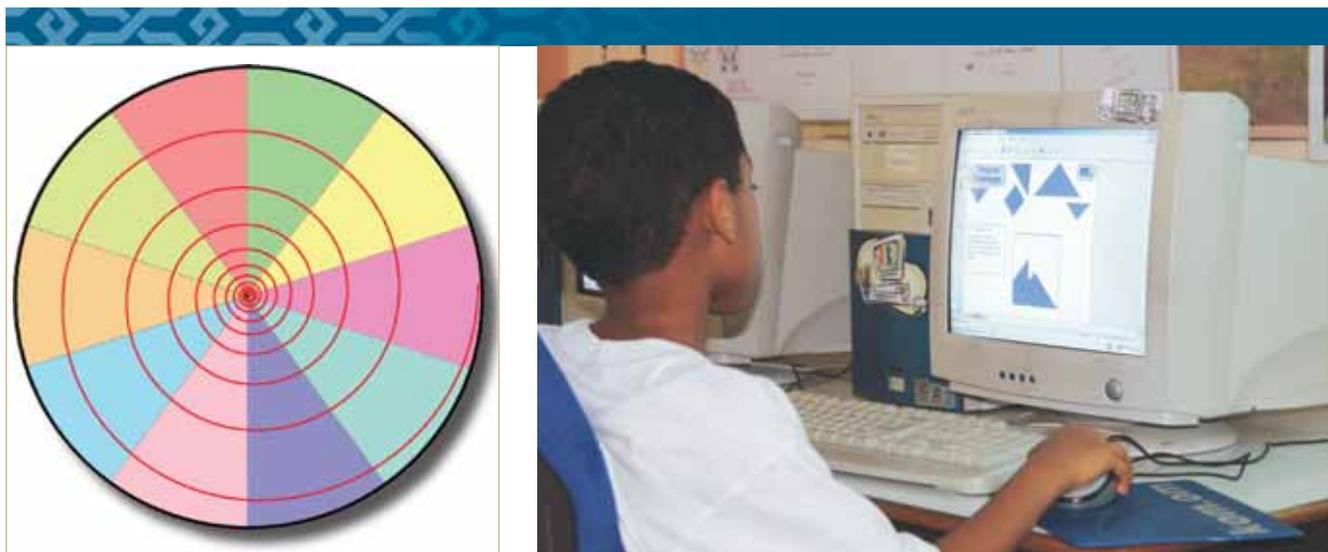


# ICT in Basic Education Schools

## General Learning Outcomes

During the ten years of Basic Education, ten general learning outcomes for ICT are addressed.

1. Respect the social, cultural, ethical, political, legal and religious concerns of others and of the Sultanate of Oman.
2. Operate, control and troubleshoot information technology systems.
3. Explain the concepts and vocabulary of information technology systems.
4. Plan and integrate the use of information technology in appropriate aspects of their studies.
5. Access data within information technology systems.
6. Interpret, select and validate data in information technology systems.
7. Input, edit and process data in information technology systems.
8. Communicate ideas with others using information technology systems.
9. Construct knowledge based upon information gained in data analysis.
10. Present knowledge using information technology systems.



- Respect social and cultural concerns
- Operate, control, and troubleshoot
- Explain concepts and vocabulary
- Access data
- Interpret, select, and validate data
- Plan and integrate
- Input and process data
- Communicate ideas
- Construct knowledge
- Present knowledge

## ICT Spiral Curriculum

Each of the ten general information and communication technology expectations is represented by a sector of the curriculum pie shown above. The red spiral represents the student's path through the curriculum from initial access to computers in grade one through to the time that they complete grade ten.

The spiral path is not entirely smooth because students will have varying types of learning experiences within an expectation area each year. In the early years' students see only small parts of each sector of the curriculum pie but, as they move through the grade levels, students are exposed to more and more of each expectation sector. The actual knowledge, skills and values that students learn change with each grade, but the fundamental ten expectations remain the same. Each year, there will be many opportunities for students to demonstrate competency within each of the ten expectation categories.



## The Role of Information Technology

Information technology has been introduced into Basic Education schools to provide opportunities for students to gradually become aware of the many ways in which computers and their peripheral components can be used as a personal tool to assist them in their learning and their future lives.

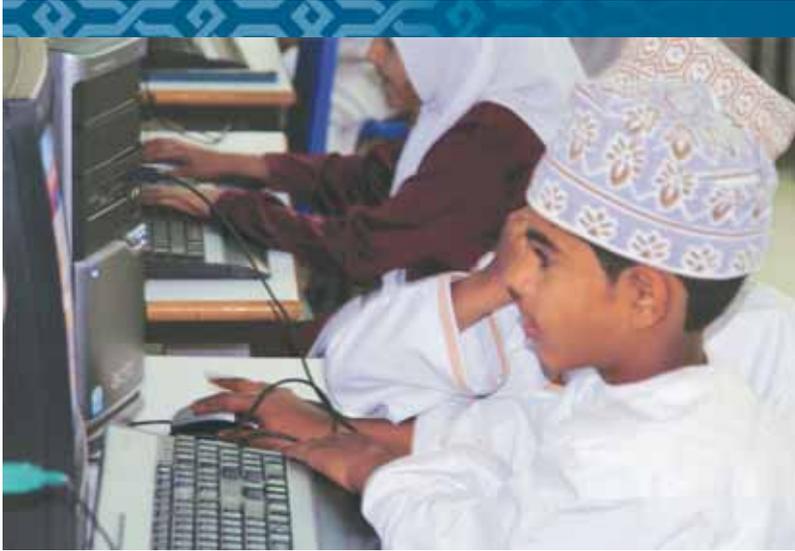
Beginning in the first grade, students use computers to complete integrated learning tasks in the learning resource centres. Computers are just another resource available to students as they learn how to access, interpret, organize, and present information. Knowledge, skills and values associated with both information literacy and information and communications technology comprise the expected outcomes of the programme.

In second cycle, students begin to have more formal classes and access to computers is quadrupled. Students not only explore the traditional personal productivity tools such as word processing, databases, spreadsheets and slideshows, but they also learn how to design and control computer robots.

Students work with various types of digital equipment to capture media and incorporate these into multimedia presentations. Object oriented programming is introduced through the design and control of on-screen E-toys and SimStories using the 'Squeak' programming environment. They explore the functions of the hardware components while they learn about trouble shooting strategies. Students are expected to apply this knowledge and skill-set to all their learning endeavours.

A mix of on- and off-computer activities accommodates the various learning styles,

**Information technology has been introduced into Basic Education schools to provide opportunities for students to gradually become aware of the many ways in which computers and their peripheral components can be used.**



**ICT learning experiences need to be integrated into all subject areas.**

interests and abilities of students. By addressing both the computer curriculum and the curricula of individual subjects through the use of realistic activities, students can more easily make the cognitive links necessary to transfer their learning to new situations.

Continuous assessment and the evaluation of student progress are achieved through observation, interviews, performance tasks and analyzing student products. Reporting on student achievement focuses on the abilities to communicate understanding of concepts, to apply procedures in new situations and to problem-solving.

## Curriculum Integration

Meaningful learning takes place within contexts in which students are familiar. It is important, therefore, that the learning experiences associated with information and communication technologies should not be isolated from the students' other studies. This means that the knowledge, concepts, skills, processes and values associated with computer use need to be integrated into all subject areas.

Vertical integration takes place through the ways in which ICT concepts, abilities and values are revisited each year at increasing levels of difficulty through the spiralling curriculum. Each integrated student learning experience is also required to address at least one learning outcome from another subject area through a system of horizontal integration.



Student learning related to aspects which are not the responsibility of any one discipline such as group roles, problem-solving, decision making, cooperation, collaboration, investigation, analysis, synthesis and reflection are integrated in a parallel fashion. In this way ICT does not become just another subject that must be taught and learned, but a way to invigorate the learning of the traditional subjects and provide learning and life skills which can be transferred to and applied in other situations.

## Assessment, Evaluation, and Reporting

The primary purpose of assessment in the ICT classroom is to improve student learning. To this end, diagnostic and formative assessment instruments have been developed to help students and teachers determine current levels of student achievement and to identify the next steps in learning.

Specific grade level student competency indicators have been developed and compiled in an ICT framework. This scope and sequence document is organized by hardware and software components. Students grow from an introductory level through developmental, consolidation, extension and application levels with these indicators. Each lesson plan includes suggestions to assist teachers to focus their

**The primary purpose of assessment in the ICT classroom is to improve student learning.**



assessment. Tracking instruments have been developed to enable teachers to record student progress.

The role of the teacher is changing. Teachers who are continuously engaged in formative assessment need to spend much more time working with individuals and small groups. They become facilitators of student learning rather than mere expert lecturers. They provide feedback on the next steps the student should take to improve their learning. Students are not told the 'right' answer to questions, but are pointed in directions which will help them to discover appropriate solutions. Innovative types of questioning strategies are being adopted by teachers as they work with students to explore the new technologies.

Evaluation rubrics provide teachers and students with common achievement standards through which to analyze and

make judgements. Summative assessment instruments help educators to determine a student's status at the end of a learning module. Teachers are provided with reporting statement starters which help to describe student strengths and weaknesses and to point towards the next steps in their learning.







# ICT in Post-Basic Education Schools

The Post-Basic Education system began implementation at the start of the 2007/2008 school year. The new programme has been designed to address national expectations and to draw on international best practice. The characteristics of the new system are shown in the box below.

## Characteristics of Post-Basic Education

- A programme which recognises individual differences and special talents.
- A core programme that emphasizes the development of employability skills and universal competencies.
- Flexibility that permits the ministry, regions or even schools to adapt to changing needs of the community in terms of Grade 12 graduate skills.
- Student-centred, activity based learning tasks which allow students to develop understanding and problem-solving abilities which can be applied in a variety of real-life situations.
- Adoption of internationally recognized curriculum and assessment standards based on learner outcomes and the authentic assessment of student performance.



## Information Technology and Information Literacy Post-Basic Learning Outcomes

While the courses outlined below all have specific student learning outcomes, students are expected to extend and apply the following general learning outcomes:

- identify, locate, gather, store, retrieve and process information from a range of sources;
- organize, analyze, synthesize, evaluate and use information;
- present information clearly, logically, concisely and accurately;
- identify, describe and interpret points of view and distinguish fact from opinion;
- use a range of information retrieval and information-processing technologies confidently and competently.

## Two Different Approaches Required

In the former General Education system, students had no access to computer technology or to any type of ICT curriculum prior to secondary school. In first and second cycle Basic Education on the other hand, students have more than 405 hours of hands-on access plus the activities which are integrated into other subject area courses.



### **Introduction to Information Technology**

To provide some initial awareness of computer literacy, an introductory programme has been introduced for grade eleven students and this is a compulsory course for all students coming from General Education schools. Students from Basic Education schools can immediately begin to select elective information technology courses.

### **Compulsory Course on Refining Research Skills**

The acquisition of research skills is important for all students regardless of which path they intend to pursue after graduation. As a result, a course on refining research skills has been made compulsory for all students. This course is held every other week throughout grades eleven and

twelve. It provides students with an environment in which they can consolidate research related concepts, skills and values acquired during the first ten years of their schooling.

Information and communications technology skills play a vital role in student investigations. As they review their findings, students identify patterns in the data and construct new knowledge. The students share their new wisdom through meaningful recommendations and presentations. A “pass” in this Graduation Project is a requirement to receive a graduation certificate.





## Elective Courses

### Business Computer Communications Course

This course is intended to help students to refine skills they need to access, select and interpret information, recognize patterns, relationships and behaviours, model, predict and hypothesize, test reliability and accuracy, review and modify their work to improve quality, communicate with others and present information. They are encouraged to continually evaluate their work in order to improve their efficiency and to be creative and to take risks. In this way, students gain familiarity with and confidence in applying communication applications commonly found in the workplace.

### Graphics Design Course

This course blends the theories of visual arts with the power of digital technology. Students learn about effective uses of line, shape, colour, and texture in conveying messages in two-dimensional design. They explore the relative advantages of vector and raster imaging techniques for the print media and the Internet. They learn to manipulate and enhance photographs. Digital three-dimensional design will be explored from visualization techniques through sophisticated software applications. Students develop a culminating project based on one of the modules studied, and this can be employed in either print or web site design.



### Computer Science Course

This course helps students examine computer science concepts. Students outline stages in software development, define standard control and data structures, identify on- and off-line resources, explain the functions of basic computer components, and develop programming and problem-solving skills by using operating systems and implementing defined practices. As well as identifying careers in computer science, students develop an understanding of the ethical use of computers and the impact of emergent technologies on society.

### Flexible Computing

The aim is that students will learn to adapt and apply the theory and procedures that they learn in information and communications technology to a range of

circumstances and situations. Wireless networks permit students to take their laptop computers with them as they gather data as part of their research. Computers have become an essential tool which students depend upon for their studies. Students have become part of the information generation.

### Higher Order Thinking Skills

Students go well beyond simply memorizing facts about computers. Skills are developed related to accessing, interpreting, analyzing and synthesizing information. Students are encouraged to use various software tools to help them to solve problems. Project planning and decision-making skills are required. Collaborative skills are developed in an on-line 'Journal Zone' environment.

**Computers have become an essential tool which students depend for their studies.**



Animations are produced to represent real world phenomena. Students are required to apply their knowledge and skills in other subjects. Presentation skills are developed through the use of a range of different multimedia tools.

## Job and Career Preparation Skills

Skills related to the workplace are integrated into all Post-Basic Education courses. Students learn to work cooperatively to solve problems and make decisions. They take on various roles to help them appreciate all aspects of dealing with co-workers and clients. Effective communications skills are integrated into many learning tasks; students develop active listening skills in order to clarify their understanding of what is heard and to ask probing questions. Presenters are encouraged to reflect on what they are saying and to ensure that their theories are based upon solid assumptions and supporting facts.







# Teacher Professional Development

The Ministry of Education regards human resources as the key factor in its quest to develop a quality education system. With regard to ICT, the professional development of the ministry's teaching staff is handled in different ways depending upon the school level and the ICT experience and abilities possessed by teachers.

## Teacher Preparation for Basic Education

### First Cycle

Although most teachers who initially worked with students in First Cycle schools were very committed, they tended to have limited experience of using computers and were drawn from other subject areas. All of their professional development came through courses and workshops organised by the ministry and delivered either centrally or regionally. While most of these teachers had good teaching and assessment skills, they often lacked knowledge and skills related to the use of computers, both personally and professionally, and on ways in which computers can enhance student learning.

### Second Cycle

Most ICT teachers in Second Cycle schools were graduates of the new Teachers' Colleges in Oman and came with a combined speciality in mathematics and computers. The courses that they had taken were related solely to computer science and business uses of Microsoft Office. As recent graduates, they tended to be very enthusiastic, but had only limited practical experience in teaching and assessment, little understanding of the concept of integration of ICT into the curriculum, and no experience with graphics software. A cascading model of professional development was developed with regional core teams attending courses and workshops in Muscat and then returning to the regions to pass on the knowledge and skills acquired using some of the instructional strategies and learning materials provided.

**The type of professional development depends on the ICT experience of teachers**



## Teacher Preparation for Post-Basic Education

Teachers at the Post-Basic level have come from several different sources: Second Cycle schools, the former ICDL programme in secondary schools and recent graduates from the colleges of education. Each of these groups represents different challenges with regard to professional development.

- Those with Second Cycle experience come with considerable experience of Basic Education teaching and assessment methodology, but require workshops on new content material.
- Those coming from the ICDL programme often have limited student-centred teaching skills and require extensive courses in graphics, animation, web page development, and programming.

- Recent graduates from colleges of education tend to be enthusiastic and show a willingness to learn, but have limited practical experience of working with real students.

## Subject Classroom Teachers

Many subject teachers have expressed interest in using ICT in their classrooms. Through special projects, some computers have been introduced for use in subject classrooms.

- Science teachers have had laptop computers and LCD projects available for use by both themselves and their students. Sensing probes have been purchased for use with specific topics with the curriculum.



- Art teachers have had access to computer labs for specific units in graphic arts.
- Geographers have used computers with students for a Global Information Systems (GIS) experience.
- Mathematics has integrated computers into units in economics and use graphic calculators and software applications within their curriculum.

All schools possess a LRC with computers for use by staff and students. Classroom teachers received professional development from colleges in the same discipline.





# Electronic Educational Portal

[www.moe.gov.om](http://www.moe.gov.om)

In line with the Sultanate's "National Strategy" for a digital society, the Ministry of Education has created a comprehensive Electronic Educational Portal System (EEPS). The portal serves as Oman's educational gateway by providing access to a group of programmes and services through the use of the internet. It is intended to serve as the entry point and one-stop site for everyone interested in education - parents, students, teachers, administrators, entrepreneurs or another ministry. Phase 1 of the EEPS closed in July 2007 and the official launch of the EEPS took place on 9 December 2007.

## Aims of the Portal

The aim of the portal is to facilitate communication within the educational process and to present it in an effective and attractive way for teachers, students, parents and administrators. Among the benefits of the EEPS is that it:

- Allows for the speedy communication of information, ideas, experiences and views on a wide range of aspects concerned with education.
- Provides attractive interactive teaching tools and innovative techniques to support learning.
- Enables interested members of the public to extend their educational opportunities and to engage in life-long learning.
- Increases the amount and quality of data available to the ministry. This helps to improve the efficiency of educational planning and enables the ministry to evaluate the results of its development programmes more quickly and more effectively.



Ministry of Education  
Sultanate of Oman

# Educational Portal

Home

Student

Parents

Teachers

School Info

UNEI

Search Word

All Words

Search

Advanced Search

UserName   
Password

Login

Forgot Password?

- › Sultanate of Oman
- › About MOE
- › Education in Oman
- › Al Saldiya School
- › Educational System
- › Regulation of Student Affairs
- › TOFEL and IELTS Centers
- › E-Learning
- › Educational Syllabus
- › Projects and Visions
- › Laptop For Each Teacher Project
- › Moeforum
- › SMS service
- › Suggestions
- › Useful Links
- › About Educational Portal
- › Educational Statistics
- › Participate in Newsletter
- › E-mail

## Latest News

The Ministry of Education achieved a remarkable achievement in the technical level by winning two prizes: Golden Award best website in the Sultanate of Oman in 2007 for its private education site and the Gold Award best educational site in the Sultanate of Oman in 2007 for the category of electronic education.

Verification of activities in the competition for best sites in Oman in 2007 and sponsored by the Information Technology and compete annually each distinct websites in the Sultanate.



Enter your  
username and  
password  
to access the  
system

## Description About Portal

The educational outreach and guidance Service department in the Directorate General Relations and Educational Information in the Ministry of Education began on a first vocational guidance with the view together to develop services to vocational guidance during the period from 12 - 15 May 2006 in the Muscat Senior Technical College develop services to vocational guidance during the period from 12 - 15 May ...  
More...

## Education System

- ☐ Pre-school
- ☐ General Education
- ☐ Basic Education
- ☐ Education After Basic Ed.
- ☐ Private Education
- ☐ Literacy
- ☐ Private Schools
- ☐ International Schools
- ☐ Learning System
- ☐ Other Information

## Tenders

- ☐ Tender no. 36-37-2007
- ☐ Tender No. 34-35-2007
- ☐ Tender No. 27-33-2007
- ☐ Tender No. 26-2007
- ☐ Tender No. 1-13-2007

## Projects and Visions

**"Laptop for each teacher" Project**  
The idea of the project "Laptop for each teacher" an old idea and not the product of the moment, and has started since a long time, it relevant to educational electronic portal project for the Ministry of Education  
More...



## Voting

What is the expectation of the use of verbal assessment to assess your children:

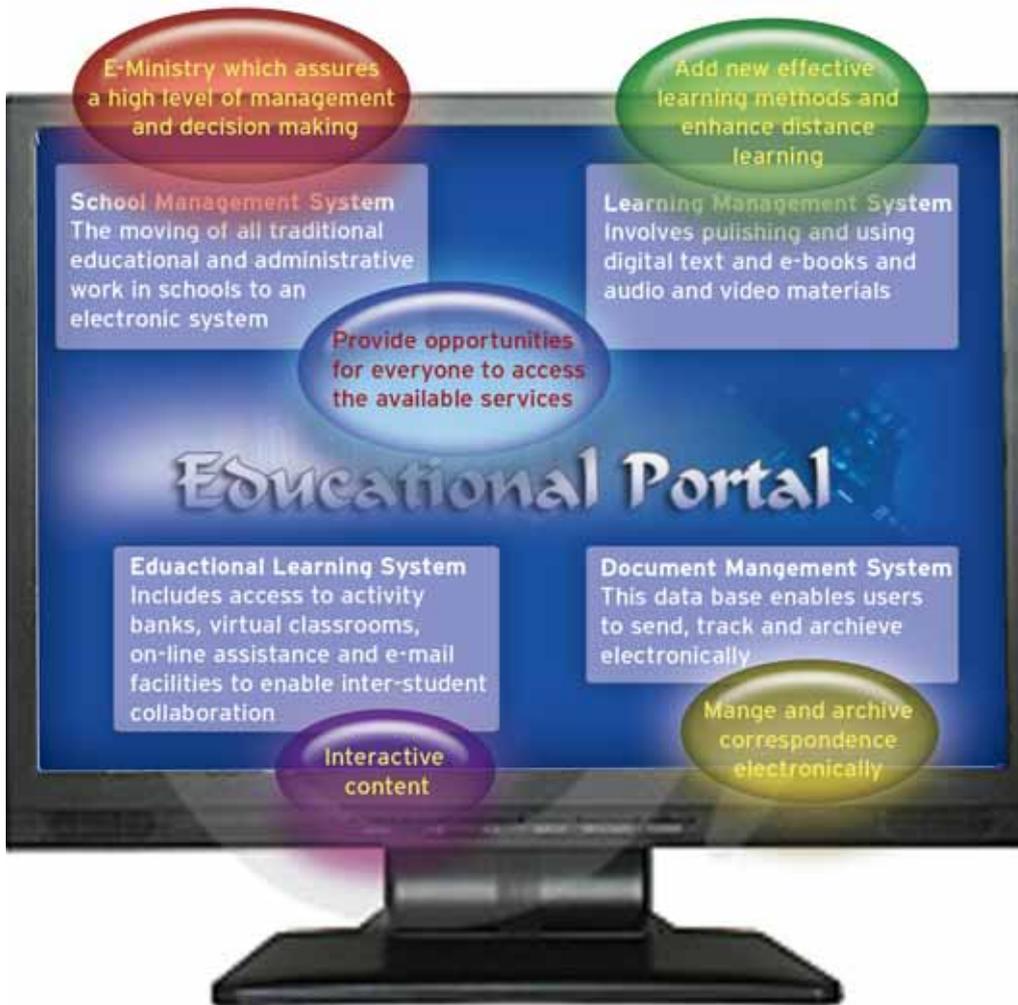
- All above
  - Help in developing their level
  - Is not conducive to progress in academic achievement
  - Gives a clear picture of the level of assessment of your children
- [Vote] [View Results]

Home Contact US



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## Components of the Electronic Portal

### Internet services available on the Electronic Portal

#### Free services presented on the home page

- Newsletters
- General and educational information
- Search engine
- Guide books
- Articles

#### Account holder services which can only be used by users at the portal

- Chat service
- Short message service
- Interactive voice response
- Electronic fax service
- Mobile phone service

## Users of the Portal

**Central decision-makers and administrators** to gain access to summary data to enable them to identify trends and predict future needs; they can access the central database for student records, including information on registration, attendance, subject choice and assessment marks.

**Schools and teachers** to gain access to school timetables; to enter marks on student achievement and reports on student lateness and absence; teachers can download computerised report cards and forms; they can enter students' choices of optional subjects for grade eleven; they have access to personal services and chat forums.

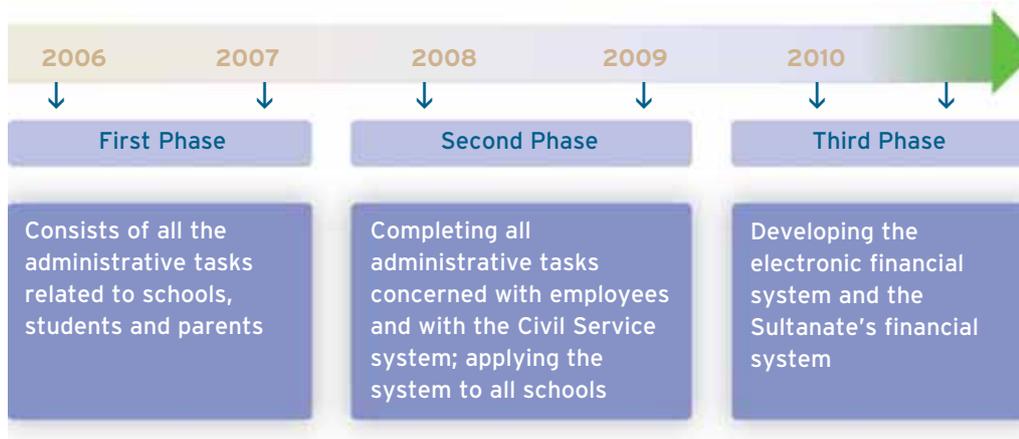
**Parents** to gain access to school timetables and examination timetables; they can register and transfer their children; they can request certificates (e.g. for good behaviour, or replacement achievement certificates) and student performance reports; they have access to fax and SMS services (e.g. information on student absence or inviting parents to meetings).

**Students** to gain access to e-learning which is a form of distance learning using virtual classrooms; they can look at the optional subjects on offer at grade eleven; they can check their examination timetables and their grades.

## The Portal Project

Due to infrastructure difficulties, the ministry has as yet been unable to offer the portal's facilities to all educational regions. At the start of the 2007-8 academic year, all schools in two educational regions - Muscat and Al Buraimi - began to pilot the portal's school administration and student information learning management platforms. A teacher in every school in these regions was appointed as a portal consultant. These teachers, known as "Champions", received specialised training on the use of the portal and their remit in their schools is to train and guide the staff - both teachers and administrators - on how to use the portal's facilities. Following an evaluation of this project, it is intended to connect all schools in all regions to the portal in the 2008-9 academic year.

**It is intended to connect all schools to the portal in the 2008-9 academic year.**



## Challenges

### Developing Materials

The usefulness of the Education Learning System is dependent on the quality of the learning materials it can offer. There is a need, therefore, to appoint a team of Omani specialists with the expertise to develop high quality materials for the system. Moreover, since most of the existing learning materials available on-line are written in English, the members of the specialist team will also need to possess skills to evaluate these materials and to decide on their suitability for the Omani context.

### Training and Support

Traditional large blocks of centrally-delivered in-service training on ICT in general, and the EEPS in particular, has proved costly in terms of time, travelling and teacher absence from school.

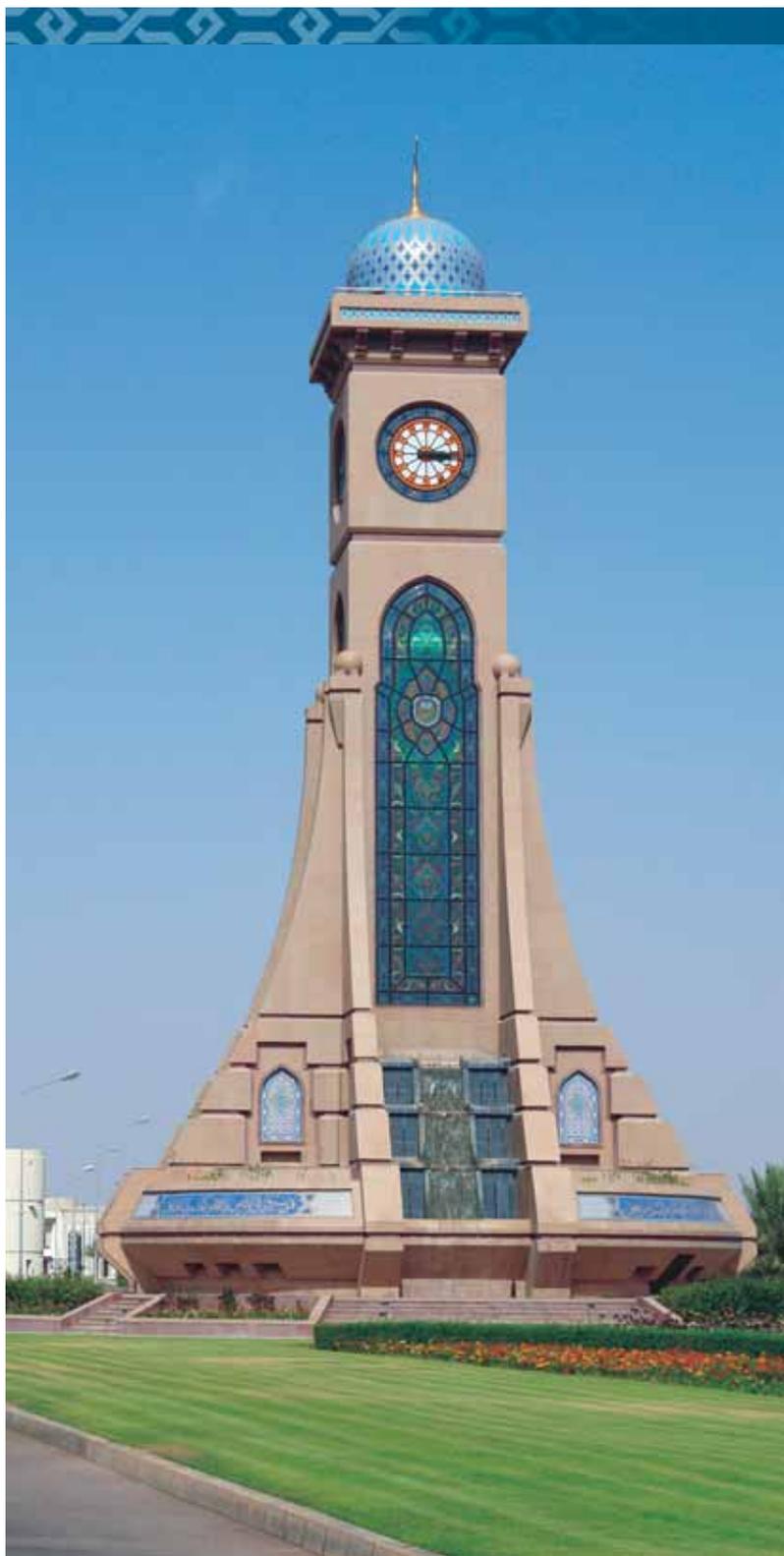
More importantly, doubts have been raised about the effectiveness of this type of training in promoting long-term changes in teacher practices. As a result, the ministry is exploring alternative models for the delivery of in-service training on the use of the EEPS, e.g. short modular training conducted inside school and with the provision of on-going support.

### Infrastructure

Schools require more computers, and the ministry has taken a number of steps to address this issue, e.g. it has initiated a "Laptop for every Teacher" project. There is also a need to improve networking and connectivity between school, region and the ministry.

Internet access is especially important for the delivery of e-learning. In a unique initiative, the Ministry of Education and Microsoft signed an agreement that will bring advanced e-mail services to 230,000

**A laptop for every teacher project has been initiated.**



students in 2008 and is intended to finally target 650,000 students. It will provide a free email service, messaging services, 5GB of storage and up to 1GB of password-protected online storage space and automatic email reply.

With the help of funding from the Information Technology Authority (ITA), the use of the high-speed ADSL system by schools has increased rapidly recently. Finally, to provide internet access to schools in areas presently not serviced by the national Omantel network, it has been agreed to connect over 250 schools via satellite in the 2008-9 academic year.

### Links

The Ministry of Education regards the creation of links with relevant ministries and organisations as an important aim for the portal. The following examples highlight the benefits of developing such links:

- Care visitors from the Ministry of Health visit schools on a regular basis and the medical files of students can be placed on the portal.
- Data on births will also be included on the portal and this will assist the Ministry of Education to plan for the future demand for its services.
- The Higher Education Admissions Centre will be able to access students'

results from the portal and this will enable them to process placements to courses more quickly and efficiently.

- It is essential that the ministry maintains and develops its links with higher education (see box below).

**Improving schools' internet access has been given top priority.**

## Links with Higher Education

Links between the ministry and higher education are mutually beneficial.

The mutual benefits include:

- Through the Ministry of Education's portal system, graduating student information is shared to facilitate their placement at institutions of higher learning.
- Projections of teacher requirements in the various levels and subject areas allow the Colleges of Education to prepare the appropriate number of teachers to meet the forecasts.
- Dialogue between the General Directorate of Curriculum staff and the colleges helps to ensure that the curriculum prepared for undergraduate and graduate courses will be suitable for the actual duties that the teacher candidates will meet in the evolving education system.
- Dialogue between college staff and the General Directorate of Curriculum helps to ensure that secondary school graduates will have the understandings, skills and values they require to achieve success in their post secondary studies.
- Faculty members from the colleges also meet with ministry personnel to plan joint ventures such as the annual robotics contest for second cycle students, and a research symposium attended by students who have achieved a distinction level in their graduation projects.



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Part 3

# Future Directions





# ICT as a Catalyst for Educational Reform

The Ministry of Education has undertaken a comprehensive reform of its education system in an effort to improve the quality of education for all students in Oman. It believes that information and communications technology can act as an important change agent to facilitate these educational reforms.

The ministry does not want information technology to become just another subject to be taught and learned. Rather, it sees it as a way to invigorate learning in all subject areas and to provide learning and life skills that can be transferred to new situations.

The basic principle for the implementation of information technology in Oman's schools, therefore, has been to integrate the use of computers into topics studied in subject areas such as Islamic studies, Arabic language, social subjects, English language, mathematics and science.

Providing a limited number of computers in subject classrooms does not only make economic sense, but it can also change the ways in which education takes place. Information and communication technology opens doors to a multitude of information sources which can enrich student learning by allowing them to become more independent learners.

Through the new technologies, students can reach beyond the physical walls of the school building and collaborate with peers and experts around the world. The available technology enables knowledge gained by students to be formatted and shared with others through interesting and exciting innovative presentation media. This means that educators need to embrace information and communications technology and develop personal professional development plans to upgrade their knowledge and skills. Only by doing so, will they be able to discover appropriate ways to facilitate and guide their students' learning.

One approach has been to place two or three computers in a classroom and to encourage teachers to ensure that they approach maximum use. The idea is that this will require teachers to adopt a different class management strategy.

**ICT can help students to become more independent learners.**





**Teachers must constantly revise their personal professional development programmes.**

It will no longer be possible to expect all students to perform the same learning tasks at the same time. Since there will only be enough computers for approximately twenty percent of a class, alternate learning activities will be required. This will encourage diverse learning styles to be accommodated. It will also mean that the amount of time that the teacher spends standing at the front of the room and lecturing will be reduced.

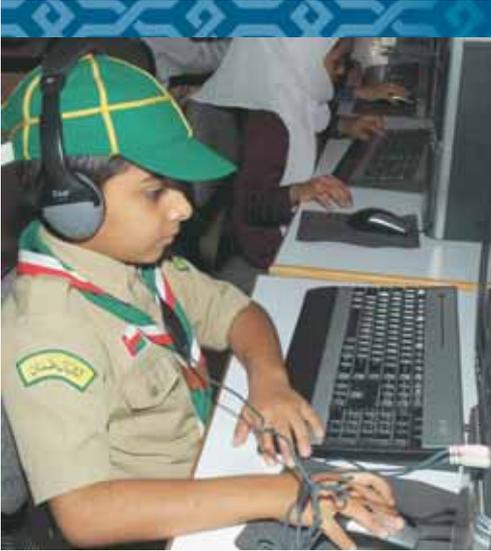
As teachers begin to work more closely with diverse student groupings, they will gain greater insights into student strengths and weaknesses. They will be better able to modify and diversify instructional strategies to meet the needs of a greater number of students.

Traditionally, the teacher and the set textbooks were regarded as the students' sole sources of information. This view of

knowledge and skills acquisition is now under serious challenge.

Although it will always be important for students to acquire factual knowledge, the body of knowledge in most subject areas is changing rapidly. Consequently, much of the information teachers are given at college is often irrelevant soon after they graduate. Textbooks take an average of eighteen months to produce and, by the time they reach students, many of the concepts and procedures incorporated are being challenged in the academic world.

Teachers can no longer rest on their laurels; as with physicians, they must constantly revise their personal professional development programmes. Curriculum developers are embracing new strategies for learning and expanding the types of resources provided for students.



Children today have little difficulty with any new electronic device. They easily learn how to communicate the newest GSM or navigate with a remote control. They have an expectation that they will be able to use this technology within their learning environment.

The World Wide Web has been a powerful equalizer for students and teachers. It can provide quick access to ideas, theories, opinions, news sources, video, music, as well as propaganda. Students need to be guided through this information maze. Teachers are learning to assist students to decide which information sources are most relevant, which ones can be trusted, and which ones have the most up-to-date information. Omani students are learning to cite sources, to synthesize information, to gain meaningful insights, and to express ideas in their own words.

Multimedia allows students to express themselves in innovative ways. They are no longer limited to the written word. They are mastering design techniques for print media, Web interfaces, animation and video.

Companies and government agencies use different types of media to reach out to and maintain their clients. Knowing how to select the right medium for the specific message and to generate different types of communiqués are necessary employment skills. These novel techniques are helping our students in school today and preparing them with communication skills for the workplace.

The measure of intelligence is changing. The memorizing of facts is becoming much less important. The essence of wisdom is becoming associated with people who know how to find appropriate answers, know how to sift through a mass of information and

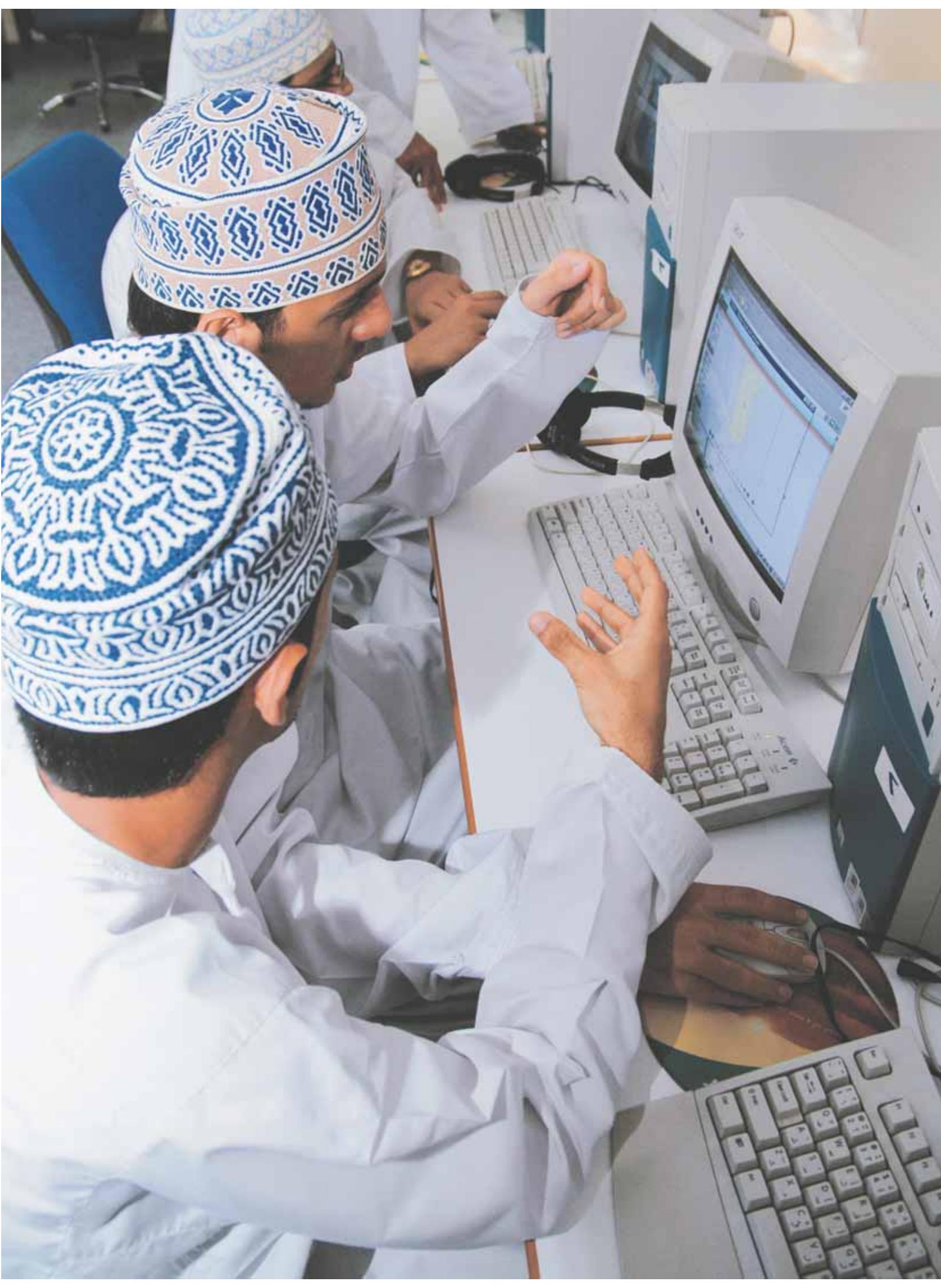
**Omani students are learning to cite sources, to synthesize information, to gain meaningful insights, and to express ideas in their own words.**



select the optimum solution for a particular situation. With the ease of access to information, the application of knowledge is becoming more relevant than the mere memorization of facts.

Strategies used for assessment and evaluation in today's information age are being modified. As teachers adopt more efficient and meaningful assessment techniques, their duties are becoming less onerous and more rewarding.







# A Future Full of New Horizons

The developments in the integrated information and communications technologies curricula in Oman are still in its formative stage. We have met many challenges and experienced some successes. The goal of developing ICT literate students through an integrated curriculum remains a fixed target.

Enthusiasm for ICT is growing within the Sultanate. Teachers are beginning to generate new ways of integrating computers into the teaching of their individual subjects. This enables them to be creative in the planning and delivery of their lessons while continuing to meet the demands of a centralised curriculum.

New elective courses at the Post-Basic Education level allow students to explore possible career choices or areas of further study. Our graduates are both computer literate and information literate, can solve problems, make rational decisions, collaborate with others, communicate effectively and work well in team situations. They are ready to face the challenges of the coming era.

Administrators at the central, regional and school levels are also embracing the new technologies. They are finding new ways to complete their daily tasks, to manage more effectively, to make links with other government agencies and to form partnerships with parents and the community.

**We are at the dawning of the information technology revolution in Oman. As the sun rises, we are looking to the new horizons with a sense of resolve and optimism.**

**The goal of developing ICT literate students through an integrated curriculum remains a fixed target.**







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