



CHAPTER 1

INTRODUCTION

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ISSUES CONFRONTING THE EDUCATION SYSTEMS OF THE WORLD

Throughout history, education has played an enormous role in the development of people, societies and nations and has become an important human right. Increasingly, education is and will continue to play a crucial role in people's lives as we move away from education within structures bound by time and space to education that is offered at any period of a person's life and in a variety of surroundings. This move is driven, in large part, by the changes in our society where there is a continuous need for information and knowledge gain, by the changes to how education is transacted and by the increasing use of information and communication technologies (ICTs) within the education system.

The right to education is captured in Article 26 of the Universal Declaration of Human Rights,¹ which notes that everyone has a right to education directed to the full development of the person. Sadly, this declaration has remained unfulfilled in many parts of the world. In an effort to ensure that the world adopts strategies to correct this and other inequalities, the international community adopted the Millennium Development Goals in 2001. The goals which relate to education are as follows:

- Goal 2: Achieve universal primary education
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
- Goal 3: Promote gender equity and empower women
Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education no later than 2015.²

The Millennium Development Goal 2, calling for universal primary education by the year 2015, is based on the Dakar Framework for Action as adopted by the World Education Forum in Senegal in April 2000. The full text of the Dakar Framework for Action (UNESCO 2000) reads:

¹Universal Declaration of Human Rights adopted and proclaimed by the General Assembly of the United Nations on 10 December 1948 with the final authorised text adopted in 1950.

²UN General Assembly Resolution A/56/326, 6 September 2001.

We hereby collectively commit ourselves to the attainment of the following goals:

- Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children
- Ensuring that by 2015 all children, particularly girls, in difficult circumstances and those belonging to ethnic minorities have access to and complete free and compulsory primary education of good quality
- Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programmes
- Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults
- Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality
- Improving all aspects of the quality of education and ensuring excellence of all so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills

For this to be achieved, a number of different elements of the education system need to be in place. These include a policy and funding regime to enable universal primary education, infrastructure development, learner support materials, teacher training and the development of an appropriate curriculum.

It is apparent that all elements of the education system need to be developed to contribute to the goals. Therein lies the challenge faced by many developed and developing countries. With many countries facing limited budgets, poor planning and implementation, lack of infrastructure and personnel, meeting the Millennium Development Goals for education becomes very difficult. Further challenges in reaching the goals are the many national and regional conflicts and the increasing rate of HIV/AIDS and other communicable disease infections and death through other natural and people-driven disasters.

The challenges are particularly acute in the developing countries, especially in Africa, South and Southeast Asia and Latin America. The following statistics illustrate the problem (UNESCO 1998):

- The 1996 gross enrolment ratios in Africa for the first level of education (primary) was 78.3 per cent. That rate was reduced by more than half for the second level (secondary education) to 32.7 per cent. A further decline was noted for the third level of education (post-secondary) to 6.3 per cent.
- In comparison, Europe displayed in 1996 over 100 per cent enrolment for primary education, 99.2 per cent for secondary education and 41.5 per cent for post-secondary education.

These figures indicate that if Africa were to increase the number of enrolments in the secondary school sector, there would be a substantial requirement for financial resources, more schools and trained teachers.

In an attempt to meet these challenges and to develop strategies to achieve the education Millennium Development Goals, many education ministers, officials and educators

are increasingly looking at the role of ICTs to support and enhance their efforts. In this context, ICTs can be defined as a combination of computing, broadcasting and telecommunications technologies, as seen in the use of multimedia computers and the networks and services based upon them. Their primary use is to aid information retrieval, storage, research and application, and there is ample evidence of the positive impact of ICTs in the education system (Haddad and Draxler 2002), which enable such systems to change to meet the Millennium Development Goals.

THE IMPACT OF ICTS ON SOCIAL, BUSINESS AND COMMUNITY DEVELOPMENT

“Major transformations are occurring in the formal education sector and other organisations that play a key role in enabling people to develop their new capabilities. These changes are partly the result of the increasing use of ICTs as enabling technologies for education and learning.” In this statement, Mansell and Wehn (1998) identify ICT as one of the major drivers of transformation within the education sector and, in doing so, reflect the shift occurring within society.

This shift from industrial age forms of production to an information and knowledge age is characterised by “key technological developments of the recent past [which] are not predominantly about economic productivity, but more to do with innovative ways of producing, storing, transmitting, accessing and using knowledge and information” (Wright 2000). Such changes towards the knowledge and information age have been driven, in large part, by the rapid advances in ICTs. These changes have been primarily in the area of computing, with the onset of the digitisation of information sources, the World Wide Web and the Internet being the main drivers. Knowledge and information are fast becoming the drivers of countries’ economies and societies.

In the context of the education system, the computer is the main type of technology that seems to be having the greatest impact and, indeed, seems to be placing the greatest challenge to education managers and teachers. Having access to the Internet and using the World Wide Web are important issues in this challenge.³

Increasingly countries are focused on improving access to computers and the Internet. These developments have been most noticeable in South and Southeast Asia, where it is expected that China, Korea and India will account for more than 72 per cent of the total Internet users in the Asia-Pacific region by 2005. Greater China, which includes China, Hong Kong and Taiwan, will eventually comprise nearly half of all users in the region, increasing from 39 per cent in 2000 (International Data Corp 2004).

These changes have also affected all sectors of the education system from the early childhood years, to primary, secondary and tertiary, adult and non-formal education to continuing professional development. The effect on the education system has been twofold:

1. To review the education system (often focusing on a few of the education sectors) so that learners leaving that particular sector have the necessary skills and competence to enter into the modern knowledge- and information-driven world

³ The Internet is defined as “a network of networks formed by connecting together of computers and computer networks around the world through telephone and high-speed data transmission lines,” and the World Wide Web as “a set of software tools and standards that allow individuals to distribute and obtain information stored on the Internet” (Haughey and Anderson 1998).

2. To use ICTs to support learning and teaching processes to enable information production, transmittal and storage

Various governments and Ministries of Education have adopted different strategies to address these two changes. One of the primary international strategies that has been adopted to address the use of ICTs in the education system, in particular within the school sector, is the development of schoolnets.

STRATEGIC RESPONSE: THE DEVELOPMENT OF SCHOOLNETS

A schoolnet is an organisation that encourages, through various programmes, the use of ICTs (mainly computers, e-mail and the Internet) for learning and teaching. Therefore a schoolnet can be defined as the entity that facilitates the collaboration between schools using ICTs for educational purposes. In doing so, a schoolnet could conduct the following activities:

- Soliciting hardware and software for schools
- Getting schools to collaborate on education initiatives using technology
- Networking to share electronic and other resources
- Training teachers in the use of educational technology
- Using ICT for school management and administration
- Advocating for ICT to support the educational system
- Collaborating on programmes and integrating them into the learning process

Schoolnets in different parts of the world have carried out various functions designed to support learners, educators, managers and policy-makers and their use of ICTs. Some of these functions include computer distribution, connectivity, intra- and interschool collaboration on education activities, content and curriculum development, teacher training on the use of ICTs in the classroom, ICT in education policy development and research.

Internationally, there are numerous examples of national and regional schoolnets (see www.col.org/cense). These national schoolnets arose under the influence of a number of factors that include, among other things, donor support provided for schoolnet start-up and innovative individuals spearheading the initiation of schoolnets (Isaacs and Naidoo 2003). A few schoolnets arose as a result of interventions from governments where government departments established such structures to support the use of ICTs in the classroom.

Noting the rapid increase in the number of countries that have launched schoolnets (and related organisational structures), the multitude of developments in the area of schoolnetworking, and the implications for policy, implementation, teacher development, infrastructure, content development, research and learner development, a study focused on the international trends of schoolnetworking was found to be necessary.

This study takes a global look at the schoolnet phenomenon within different regions. Individual authors were asked to report on Africa, the Americas, Europe (including Eastern Europe and Russia), the Middle East, the Pacific Region (Australia, New Zealand and the Pacific Islands), South Asia and Southeast Asia.

REGIONAL SCANS OF SCHOOLNET DEVELOPMENTS

In conducting the regional scans, the authors were requested to provide an overview of the region, general indicators on the type of technologies available and used within the school education system and statistics that indicate the use of computers and the Internet within the education system. Within this context, the chapters on the regions also outline the drivers for schoolnet developments and the nature of the organisational entity (if present) that has developed. In addition, the regional scans focus on teacher training opportunities. Further details of how countries have used ICTs in the education system are presented in specific case studies.

- **Africa** has often been described as the most impoverished continent. Therefore developments in the area of ICT use in the education system and in particular the lead role of schoolnet organisations offers hope to Africa. This chapter captures the excitement that is in the air in Africa and provides a rich description of schoolnet developments. In identifying the salient features of African schoolnets, the author identifies the three stages that most schoolnets are currently in. These stages also have their differing organisational forms and resource models. The author provides further details of teacher training and professional development in the area of using ICTs and briefly focuses on Nigeria and the Western Cape Schools Network in South Africa for the case studies.
- **The Americas** (North, Central and South America) have made a rich contribution to current models on the use of ICTs in the education system. This contribution includes all sectors of the education system. In the schooling sector, the work done in Canada, the United States and some of the South American countries (e.g., Chile, Brazil) have provided the world with examples of what can be done using ICTs. This chapter provides an overview of some of these developments of the region and offers indicators of the type of technologies available and used within the school system.
- The countries of **Europe and the Commonwealth of Independent States (CIS)** also have vastly differing political, social and geographic features. While Europe and the CIS have attempted to create super regional governance and trading structures, this type of merger has had little impact on educational technology. This chapter highlights the great variation of ICT availability and use and the range of schoolnet organisations that exists. It also outlines regional and national initiatives and focuses on efforts by non-profit organisations working in the former Eastern bloc. The case studies of the European schoolnet and the work of Schools Online provide examples of the range of initiatives in this region.
- The countries of the **Middle East** (including North Africa) are perhaps the most similar from a geographic and social context. However, this chapter offers insights into the variations that are present in this region with respect to the education systems and the level of ICT access and use in the education system. The case studies of Egypt, Lebanon and Jordan illustrate the nature of government intervention, the role of development agencies and the rich range of initiatives being undertaken to promote the use of ICTs in the education system. While schoolnets do not exist, it is clear that there are various governmental and other organisations providing the types of support and services that a schoolnet typically offers.
- The countries comprising the **Pacific Region** (Australia, New Zealand and the Pacific Islands) are politically, socially and geographically very different. These differences are noted in the chapter and are further illustrated by the statistics on levels of ICT access and use. Based on these differences, countries have undertaken

strategies to encourage the use of ICTs in the education system that have been built on the local context and resource base. However, this region does have a rich culture of collaboration, which is more viable with the use of ICTs. The case studies chosen (Pacific Island Network, Virtual Schooling Services Pilot in Queensland, and Australia and the New Zealand Cluster School Networks) offer useful insight into how different countries have approached using ICTs in their education systems.

- The **South Asia** region includes India, Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan and Maldives and is home to about one-fifth of the world's population. This region has also experienced ethnic and regional conflicts, reflecting vast language, religious and ethnic divides. There are also very diverse issues and contexts that drive developments in the region. The author highlights the differences between countries with respect to these issues and contexts and shows how each country is addressing the use of ICTs in the education system. The chapter offers country analyses showing how ICTs are being used in the school education system. In focusing on developments within countries of the region, this chapter also notes where schoolnets and schoolnet-related organisations have been developed.
- The **Southeast Asia** region is one of extremes in all aspects from population, income levels, ICT penetration, culture and languages. This region consists of Brunei, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. The chapter focuses on ICT penetration of each country and its use within the education system. While noting that schoolnets are increasingly being seen as important to the support of ICT use in education, not all countries have established such entities. A recent programme of UNESCO (Bangkok) is supporting this development in participating countries. The schoolnets being developed offer a more government-driven model, one that contrasts with similar organisations in Africa (which is more donor-driven).

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