

# Improving Education Planning and Management through the Use of ICTs

*Proceedings of UNESCO-KEDI Study Visit  
Seoul, Republic of Korea, 10-13 July 2007*



This compendium summarizes the presentation and debates of participants in the Study Visit Programme on *Improving Education Planning and Management through the Use of ICTs*, held in Seoul, the Republic of Korea, from 10 to 13 July 2007. Jointly organized by UNESCO and KEDI, in collaboration with KERIS, the National Commission for UNESCO and the Ministry of Education and Human Resources Development of the Republic of Korea, the programme was attended by over 20 participants, including two national representatives from 6 countries (Armenia, Azerbaijan, Georgia, Kenya, Mongolia, Republic of Korea, Uzbekistan), 3 UNESCO staffs from HQ, Nairobi and Tashkent Office, one international expert from SEAMEO, and 7 experts from Republic of Korea (MOE&HRD, KEDI, KERIS, NatCom).

Dr. Sung-Sang Yoo, Director of International Education Cooperation Team of KEDI, and his two colleagues as researcher, Ms. Hye-young Park and Ms. Eun-young Kum, contributed to organizing the programme and editing this compendium volume. As international expert, Mr. Pierangelo Alejo, Head of the Flexible Learning Solutions Unit of SEAMEO, helped to summarize the contributions of the participants. Dr. Ilyong Cheong, UNESCO, contributed to the planning and coordinating of the programme.

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*Improving Education Planning and Management through the Use of ICTs: Proceedings of UNESCO-KEDI Study Visit, Seoul, Republic of Korea, 10-13 July 2007*

\* This Programme was funded by UNESCO ROK-FIT (Republic of Korea Funds-in-Trust).

This document is published by:

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Printed in Seoul, Korea

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## Preface

Korea is a model nation, having achieved economic development out of their desperate situation after the 36-year Japanese occupation, the Korean War, and a severe confrontation of ideology between South and North Korea. By developing an educational system and widening the chances for every school-aged child to have an education, Korean education has been recognized as playing a pivotal role in Korean development. In particular, Korean experience in vocational education and training [VET] and ICT has been frequently attributed as a specific link to economic growth. With ICT, participants from six countries will be guided find such links in practical and technical ways.

In this regard, educational management through information systems has been contingently focused on for decades in order to raise effectiveness as well as efficiency in school education. Specifically, ICTs are at the center of the issue in terms of “how efficiently and effectively school education can be planned and managed with the help of ICTs.” With the collaboration of the Korean Education and Research Information Service [KERIS] and the Korea National Committee of UNESCO, the Study Visit was well organized for productive discussion among participants from seven countries: Armenia, Azerbaijan, Georgia, Kenya, Mongolia, and Uzbekistan.

I believe that the UNESCO-KEDI Study Visit 2007 was a cornerstone for educational cooperation. The participating countries were to able share each experience and deepen their understanding of issues in education planning and management. Each session was a space to raise issues and problems for a more vivid discussion among all participants. Each country was able to get specific and practical solutions out of discussions through the program. Even though Korea is a strong model, I strongly believe that each participant country will soon become model countries by developing education for national progress.

I remember that UNESCO, a co-organizer and in particular, Dr. Ilyong Cheong made this joint program possible by supporting it's planning and financing. Specially, I would like to thank Mr. Pierangelo Alejo, Head of the Flexible Learning Solutions Unit of Southeast Asian Ministers of Education Organization [SEAMEO] for his partnership with program and availing us his rich expertise on these issues. Finally, I deliver my sincere gratitude to all the presenters and assistants in each session for their dedicated work.



Hyung Yeel Koh, Ph. D.  
President

Korean Educational Development Institute (KEDI)

## **Preface**

This volume, “Improving Education Planning and Management through the Use of ICTs”, summarizes the presentations and debates of the participants during the “Study Visit for Improving Education Planning and Management through the Use of ICT”. Held in Seoul, the Republic of Korea, from 10 to 13 July 2007, this study visit programme was jointly organized by UNESCO and Korean Educational Development Institute (KEDI) in collaboration with KERIS, the National Commission for UNESCO and the Ministry of Education and Human Resources Development of the Republic of Korea. Given the theme’s significance, both for policy-makers as well as for educational specialists, UNESCO and KEDI are publishing the proceedings for widespread dissemination.

The Dakar Framework for Action identified the use of new information and communication technologies as one of the main strategies for achieving the EFA (Education for All) goals. The use of ICTs in and for education is rapidly expanding in many countries, and is now acknowledged worldwide as both a necessity and an opportunity. Rapid developments in ICTs have brought about significant changes in the way the world communicates and operates. These changes have also had a great impact on the education sector, both in terms of the content and delivery of educational services and of educational management.

To achieve EFA goals, many countries have been engaged in the preparation of education plans or in the integration of the EFA goals into their existing education development plans in accordance with the criteria outlined in the Dakar Framework for Action. However, some education plans remain at the level of policy statements and do not include reliable statistics nor credible information on resource projections. In some countries, the use of ICT in and for education is still at an early stage.

ICTs are improving all over the world. By applying these technologies to education, ICT and EMIS could help improve the effectiveness and outcomes of the education system. Nations have invested much in education and as a result, developed and gained significantly. In Korea especially, there was accelerated progress in ICTs promotion with special support from the President and the government 10 years ago. However, the situation is different with each country depending on how one decides to use and promote it.

The variety of national experiences in this document shows that the introduction of ICTs itself can help improve the delivery of education and the formation of credible educational policies and strategies, but cannot guarantee good quality. The major lessons from this study concern the importance of continuous professional development of education leaders and a strong political commitment in shaping and directing pertinent policies for ICTs in education.



All the participants highlighted that international cooperation, especially in ICTs, needs to strengthen its assistance to country strategies for continuous improvement through the dissemination of educational linkages and exemplary cases of good practice that would enable them to formulate their own benchmarks for progress.

Finally, this study is the outcome of the reflection on and the sharing of diverse national expertise and experiences. Through this publication, UNESCO hopes to contribute to enhancing the processes of strengthening national capacity in educational development planning and implementation through dissemination of lessons drawn from the experiences of the participating countries to decision makers and specialists in other countries.



Mohamed Radi  
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# **I. Introduction**

## **1. Background**

The Dakar Framework for Action (DFA), adopted at the World Education Forum in Dakar in April, 2000, has invited all countries and the international community to achieve basic, high quality education by 2015. In response to this recommendation, many countries have prepared and implemented their own educational plans and applied the EFA goals in their education development plans.

However, it has been revealed that the status and needs for national planning and implementation of EFA in some countries still remain at the level of policy statements and are handicapped by weak or unreliable statistics, and the absence of credible resource projections and weak implementation capacities. Thus, many countries have requested technical support for educational planning and management, particularly in the following areas:

- Capacity building in strategic planning, policy simulation, resource projections and efficient management etc.
- Monitoring and evaluation systems, particularly in data collection, processing, analysis.

Regional and international meetings have also drawn attention to difficulties faced by some countries in designing credible education policies and plans, and others have been confronted with the formulation of relevant operational strategies. Among the critical issues highlighted are weak information systems for planning and management of educational systems, along with imprecise strategies and action programmes.

In this aspect, UNESCO has assisted its member states in strengthening their national capacities by using their own technical expertise and also by facilitating exchanges of experience between countries across the world. This can help national policy and decision makers identify and design practical solutions to address the needs in their educational systems.

Within this framework, a ROK-FIT project was developed and implemented during 2003-2005, focused on strengthening institutional capacities through technical assistance in the field of educational planning, policy formulation, sector management, and Educational Management Information System (EMIS). Armenia, Democratic People's Republic of Korea (DPRK), Georgia, Mongolia, and Uzbekistan joined in the first phase of ROK-FIT project. Although the countries had common objectives, the specific focus of the project in each country differed. The project contributed to elaborating a 10-year education

sector development plan and reinforcing the EMIS in Armenia. In DPRK, it allowed the Ministry of Education to set up a modern EMIS, while in Mongolia it contributed to the preparation of the 10-year education development master plan, which made Mongolia eligible for EFA-FIT.

At the completion of the Phase I project, the lack of reliable data and information, as well as insufficient capacities in strategic planning and sector management were still identified as main concern areas by beneficiary countries. The latter also requested greater support in further strengthening their capacity for using ICTs in education planning and management.

Aiming to respond more effectively to these concerns, the second phase of ROK-FIT project (2006-08) was developed with ICTs for educational planning and management as one of its major components. The ROK-FIT project Phase II is to be launched through a study visit to Republic of Korea, in order for the participating countries to have direct exposure to a successful experience in the operational ICTs in planning and managing its education system. In addition, it is expected that participating countries will receive some insight into the issues confronting their own educational systems.

## **2. Purpose and Progress of the Study Visit**

### **A. Objectives**

This study visit was aimed to contribute to the enhancement of national capacity in educational development planning and management. In particular, it was focused on innovating participating countries' national education systems through reliable information systems and effective utilization of ICTs. The objectives of the study visit were as follows:

- (1) Sharing the Republic of Korea's experience in the use of ICTs in educational planning and management;
- (2) Sharing experiences, lessons and issues confronting participating countries;
- (3) Strengthening the capacity of the participants, particularly in needs assessment and policy formulation, specifically in the area of ICTs for educational planning and management.

### **B. Progress of the Study Visit**

■ **Date:** July 10 – 13, 2007

■ **Venue:** Seoul, Republic of Korea

- **Theme:** Improving Education Planning and Management through the Use of ICTs
- **Organizers:** Korean Educational Development Institute (KEDI) and UNESCO
- **Official Language:** English
- **Participants**
  - Educational experts and officers from Armenia, Azerbaijan, Georgia, Kenya, Mongolia, Uzbekistan
  - International expert from SEAMEO INNOTECH, Philippines
  - Educational experts, officers, researchers from Korean Ministry of Education, Korean Educational Development Institute, Korea Education & Research Information Service, and Korean National Commission for UNESCO

(See Annex 1 )
- **Programme**

The Study Visit programme was started with an introductory session on Korean experience and followed by field visits for exposure to the actual operation. It was continued with presentations and discussions of the participating countries' experiences, as well as presentation of the tools and models in the use of ICTs in education planning and management. Finally, it was concluded with discussion on further cooperation. For detailed programme, see Annex 2.



## **II. Development Process of Korean Education**

Chapter II introduces the development of Korean education. First, the role of education in making significant progress in not only economic, but also in the social development of Korea is explained. The first paper overviews Korea's economic and social development; how education policy is linked to economic development; the problems Korea is faced with, and the regulations that will resolve the problems.

Second, the development process of educational management information system (EMIS) in Korea is introduced. In this part, the development process and current status of Educational Statistic System (ESS) and National Education Information System (NEIS) are explained. It can be said that while ESS covers the formal side of education, NEIS covers the informal side, such as administration, school affairs, etc.

Third, ICT development in Korean education is described. In the beginning, the goal was for Koreans to just use ICT in the fields of academic associations, the press, etc. However, as it developed, the main goal now, is to gather and distribute education resources and implement them into the best practices. In this aspect, E-learning is suggested for future issues of the sustainable development of Korean education.

Finally, education statistics and education planning in Korea are introduced. A data collecting system, using computer technology, was designed in 1998 and has been and continues to be operated by KEDI. In addition, a web-based online system was established in 2002 to make statistical information available for policy decision making and educational research. The details of the educational data process are described in this part.

# **1. Education as the Key to National Prosperity: Korea's Experience<sup>1</sup>**

## **A. Introduction**

Korea has made significant progress in economic and social development during the past five decades. In particular, economic growth has been remarkable - i.e., there has been remarkable increase in per capita Gross National Income (GNI) during the same period has been - from US\$ 67 in 1953 to US\$ 18,372 in 2006.

Many experts suggest that education has been one of the major driving forces for national development in Korea. It has been agreed that Korea's economic achievement is a consequence of well-intended investment in education at the national level. In this context, the Korea's education-driven economic growth model is now viewed as one of the best practices for developing countries to adopt as a national development strategy.

In consideration of the way Korea has gone through in developing the economy and society, the Korean model may fit well for

- A. Countries which have little natural resources such as oil and natural gas, and therefore have to rely on human resources as the foundation of economic development;
- B. Countries which retain a Confucius cultural legacy that is more likely to have a centralized governance system; and/or
- C. Developing countries where highly advanced systems may not work well.

The purpose of this paper is threefold: First, the paper intended to provide an overview of Korea's economic and social development. Second, it meant to explain how education policies have been linked to economic development in Korea. Third, it provided challenges that Korea is now faced with, and reviewed policy directions that have been implemented to cope with the problems.

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<sup>1</sup> This paper was presented by Sang Hoon Bae, Director in the Ministry of Education and Human Resources Development, Republic of Korea at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

※ The author is indebted to Dr. Kim, G. J., Deputy Minister for Human Resources Policy in the Ministry of Education and Human Resources Development, Republic of Korea for valuable discussion and advice. A large part of the paper was written based on his article, "Education Policies and Reform in South Korea."

## < Korea at a Glance >

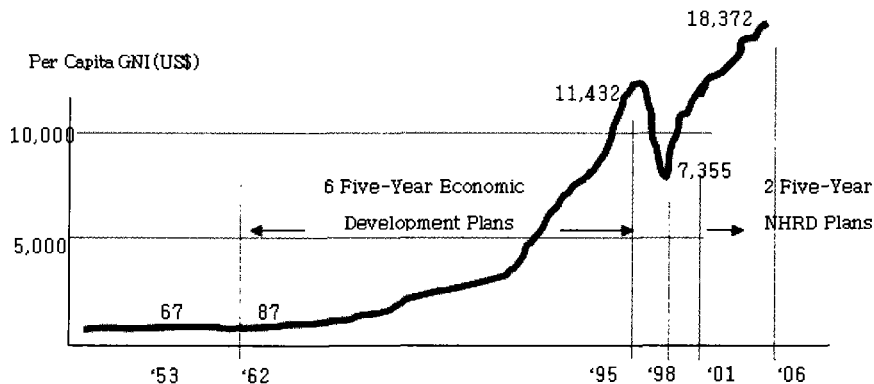
- Area: 99.6 K Km<sup>2</sup> (107th)
- Population: 49 Million (26th)
- GNI: US\$ 887.4 Billion (FY06) \* GNI per capita: US\$ 18,372
- National Competitiveness: 29th (By the IMD World Competitiveness Yearbook)
- Economy and ICT (World rank)
  - Economy (12<sup>th</sup>), Broadband diffusion (2nd), Home PC diffusion (3rd)
  - Joined OECD in 1996

## B. Economic and Social Development of Korea

### *Economic growth*

Korea joined the OECD in 1996 and is the world 12<sup>th</sup> largest economy as of 2006. Economic accomplishment of Korea can be explained in two ways: (a) economic growth and (b) transition to a knowledge-based economy.

First, GNI per capita, a widely used measure of economic position and thus possibly national wealth, has dramatically increased. In 1953 when the Korean War ended, GNI per capita was only US\$ 67. Although there was an economic downturn in 1998, which was triggered by a financial crisis, GNI per capita in 2006 reached US\$ 18,372 that is about 270 times higher than that in 1953 (see Figure II - 1).



[Figure II-1] GNI per capita by year

*Note.* From “Korea as a knowledge economy,” by An, I.W., 2005, Knowledge Development Program PREM Week.

Industrial structure has also been changed during the same period. The proportion of the workers working in the agricultural sector among all

employed people has kept decreasing from 63.1% in 1963 to 7.7% in 2006. On the other hand, the growth in the number of workers in the service industries is notable - from 25.5% in 1963 to 66.6% in 2006. This change implies that the focus of Korean economy has been moving from labor-intensive industries toward a high value-added service oriented economy.

In a nutshell, during the past five years, Korean economy has achieved the quantitative growth as well as qualitative reorientation toward a knowledge-based economy.

### ***Social development***

Supported by economic growth, there has been impressive progress in modernization and democratization in Korean society. According to Human Development Index (HDI), a comparative measure on standard of living for countries developed by the United Nations, Korea ranked 26<sup>th</sup> in 2004.

Given that the components of the HDI include life expectancy, adult literacy, education level, and other measures on standard of living of people, progress in the HDI ranking is viewed as development of the society. Among many HDI measures, trend in life expectancy and infant mortality rate are shown below (Table II -1).

**[Table II -1] Life Expectancy and Infant Mortality Rate by Year**

	1970	1998	2004
Life Expectancy (years)	62.6	72.6	77.3
Infant Mortality Rate (per 1,000 births)	43	5	5

### ***National development plans***

From a policy point of view, it should be pointed out that strong leadership from the government has contributed to Korea's rapid economic and social development. The government leadership was actualized by two important plans. One is the five-year economic development plan (1962-1995), and the other is the national human resources development plan (2001-present). Both plans are comprehensive national development plans, which intended to develop the economy as well as the society.

Economic success of Korea began with the establishment of the five-year economic development plan. The 1<sup>st</sup> plan was made in 1962, and its goal was to build a self-supporting economy and reconstruct industrial infrastructure that was devastated during the Korean War. Since then, 6 five-year economic

development plans were made and implemented until 1995 - the focus of each plan will be explained in the later section. Implementing those plans, the Korean government has formulated educational policies to support economic development and provide trained workers. Coupled with the Korean people's strong desire for a "better-living," those five-year plans has made great contribution to economic growth and social development in Korea. In 1995 when the last plan ended, GNI per capita reached US\$ 11,432, which was about 130 times higher than that of 1962 when the first plan started.

In the meantime, faced with intense global competition, the Korean government became aware of human resources development at the national level (hereafter NHRD) as one of the key determinants of national competitiveness. According to Korea Research Institute for Vocational Education and Training (KRIVET), NHRD refers to "all national efforts, including education, training and cultural activities, taken to develop and utilize human resources efficiently." The 2<sup>nd</sup> NHRD plan is now being implemented to improve individuals' quality of life and strengthen national competitiveness. In 2001 the 1<sup>st</sup> five-year NHRD plan (2001-2005) was established in order to enhance the nation's knowledge base and develop globally competitive workforce. The 2<sup>nd</sup> plan is being implemented with a vision of "Join the ranks of world's top 10 knowledge power."

### **C. Education System in Korea**

The school system in Korea consists of six years of primary school, three years of middle school, three years of high school, and two years of junior college or four years of college or university. Among them, nine years of primary and middle school are a compulsory education period.

As in many other countries, high schools are divided into two types: general vs. vocational high schools. The higher education institutions are classified into four categories: (a) colleges and universities; (b) teacher's colleges and colleges of education; (c) air and correspondence universities and open universities, and (d) theological colleges, seminars, and others.

Two distinctive features of Korean education are noteworthy: the egalitarian ideal and the zeal for education. First, from the beginning of the expansion process, the government has been keen to ensure equal opportunity for all regardless of gender, religion, geographic location, or socioeconomic status. Second, Korean society has traditionally placed a high value on education. The passion for more and better education has remained strong, and thus has been one of the major reasons for the server competition for college entrance, wide spread private tutoring, and grade repetition. Due to these factors, Korea has seen parents' strong support for their children's education and their involvement in and contribution to schools.

**[Table II-2] Sequential Investment in Education**

***Free compulsory education:***

In 1954 right after the Korean War, the Korean government launched its first six-year plan for free compulsory primary education as an effort to provide educated workforce to the economy. This plan was financed by the enactment of the Education Tax Act in 1958 and partially through foreign aid. As a percent of total government spending, the education budget more than tripled during this period, from 4.2 percent of the annual government budget in 1954 to 14.9 percent in 1959. Much of this increase was spent to build more schools and reduce double-shifting schools. During this period, most of the education budget was allocated to primary education. The second plan for universal primary education began in 1967 and ended in 1971. During the second plan, emphasis was on building and renovating more schools and classrooms. Free textbooks were provided to all primary school students. By the late 1960s, primary education became free to all eligible school-aged children. Consequently, secondary and tertiary education during this period had to rely on private resources such as tuition and fees.

***Expansion of secondary education:***

As the goal of universal primary education was fulfilled, competition for entrance into secondary schools in general and into elite schools in particular became so intense that grade repetition and private tutoring soared and became a serious social concern. Extreme competition at an earlier stage of schooling was criticized on both education and economic grounds. It was pointed out that examination preparation would hamper the mental and physical development of a child, and that private tutoring would place excessive financial burden on parents. The intense competition, depicted as “examination hell” stemmed not only from the supply side, since secondary school places were limited but also from the demand side since most people preferred elite schools. This social pressure coincided well with an increase in the need for skilled workers caused by a rapid economic growth and high wages associated with a college degree. To this problem, the Korean government responded in two ways: by removing barriers of student flow and by increasing capacity at secondary schools through public financing and privatization. In 1968 the government abolished the entrance examination for middle schools and introduced a lottery system for student placement. The lottery was perceived as fair because placement was based on residence rather than test scores, which might reflect economic means or other socioeconomic factors. Students, parents, and other stakeholders welcomed the new system. However, the government had to ensure that it would a) increase school places and b) strive to equalize middle schools in terms of school inputs such as teachers and facilities. All these efforts helped to expedite the process of education expansion at the middle school level. In 1974 the government introduced “High School Equalization Policy,” which aimed to equalize or level school inputs – such as operation expenditure, student intake, class size, and education facilities- across schools. A new admission policy, which is still in effect in most metropolitan areas, was adopted. The new system replaced the individual institution’s own entrance examination with the locally standardized test. The change in admission policy, under the presence of excess demand for secondary education enrollment through a

mechanism almost identical to that of middle schools.

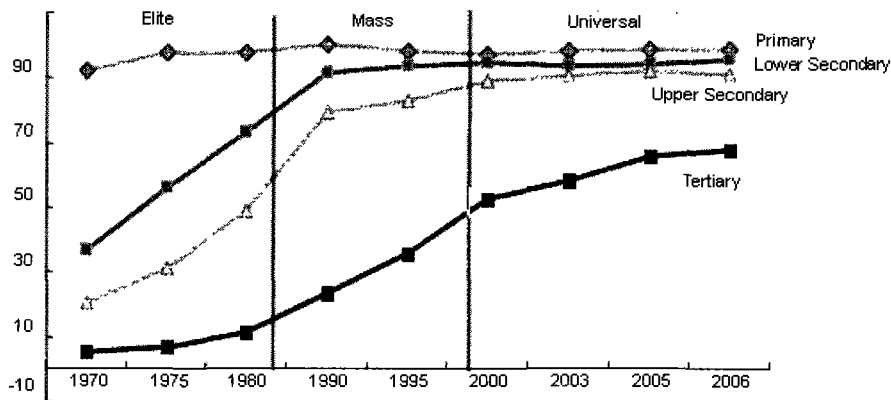
***Expansion of tertiary education:***

Until the late 1970s the government had exercised tight control over the enrollment quota for both public and private institutions of higher education. The rationale was to keep the enrollment growth within the demand of the labor market, and to maintain the quality of education being provided. As a result, college enrollment increased only at a moderate pace until the 1970s. In 1980 the government introduced a drastic reform measure for higher education. A new national standardized preliminary test was introduced, replacing the individual college admission test. In addition, the government decided to accommodate more college aspirants by accrediting more private institutions. The system of enrollment management was also changed from an admission quota system to a graduation quota system, under which a college was authorized, for example, to admit 130 students but had to dismiss 30 of them by the time they graduated. College enrollment soared by more than 2.5 times between 1980 and 1990, due to the implementation of graduation enrollment quota system along with the accreditation of additional private institutions. Advancement rate to tertiary education has dramatically increased after 2000. In 2006, it reached 81.1%, meaning universal tertiary education. It was natural that the government's policy focus has been changed from expansion of tertiary education opportunities to quality of tertiary education and linkage between university and businesses and industries. Among many projects to improve the quality of university education, the Brain Korea 21(BK21) project to develop world-class research universities is noteworthy. During the 1<sup>st</sup> phase of BK21 (1999-2005), US\$ 1.4 billion was invested to the selected universities. The 2<sup>nd</sup> phase of BK21 (2006-2012) has been implemented with the investment of US\$ 2.4 billion. In recent years, the quality improvement is further emphasized with the enhancement of autonomy of tertiary education institutions. In 2007, the government proposed the Strategic Plan for Improving Tertiary Education. This plan includes increase in public investment in tertiary education and provision of more university autonomy.

## **D. Quantitative Growth and Educational Achievement**

Given the limited financial resources, Korea had to make sequential educational investment from primary education in the 1960s, to secondary education in 1970s, and then to tertiary education after the 1980s. As a result, step-by-step attainment to universal education was possible. As will be described in the next section, however, this investment strategy has been well matched with the labor force needs of each developmental stage during the period.





[Figure II-2] Enrollment Trend by Education Level

With steady educational expansion, educational achievement of Korean students was excellent. Below is the table showing Korea students' achievement level at the international student assessments.

[Table II-3] Korean Students' Achievement at The International Student Assessments

Rank	TIMSS 2003 (8th grade)		PISA 2003 (15 year old)			
	Math	Science	Math	Reading	Science	Problem Solving
1	Singapore	Singapore	HK-China	Finland	Finland	Korea
2	Korea	Taiwan	Finland	Korea	Japan	HK-China
3	HK-China	Korea	Korea	Canada	HK-China	Finland
4	Taiwan	HK-China	Netherlands	Australia	Korea	Japan
5	Japan	Japan	Lichtenstein	Lichtenstein	Lichtenstein	New Zealand

\* TIMMS: Trends in International Mathematics and Science Study (45 Countries)

\* PISA: Program for International Student Assessment (41 Countries)

## E. Education and Economic Development

### *The 1960s through the mid-1970s*

In 1962 the Korean government introduced a series of five-year economic development plans. The first two five-year plans (1962-1971) emphasized the growth of labor-intensive export industries such as light manufacturing industries (e.g., clothing, textile) and consumer electronic goods industry (e.g., television sets and radios). The primary goal of education policies in the same period was to provide trained workforce to the economy. The curriculum during this period put an emphasis on the practicability of education, anticommunism,

and moral development. Policy efforts were made to expand basic educational opportunities to all children. Short-term measures such as increasing class size and double shifting were employed to cope with the growing need for basic education.

As the economy became more industrialized in the late 1960s, it became necessary to increase the supply of skilled labor force in general and vocational and technical labor force in particular. The close link between educational and economic plans became more important during the third five-year plan (1972-1976), which stressed the development of heavy industries (e.g., shipyard and chemical industries). Therefore, vocational and technical education at the upper secondary level was more emphasized from the late 1960s and strengthened throughout 1970s. The school curriculum became more discipline-oriented, stressing science and technology education. Discovery and inquiry were promoted as a major teaching method.

### ***The mid-1970s through the 1980s***

During this period, the government started to recognize the importance of education and other social policies in national development. The fourth five-year plan (1977-1981) included education, public health, and housing as important national policy agenda. The fifth five-year economic plan (1982-1986) emphasized a harmonious development between the economy and society. The priorities were set not only by economic pressure but also social factors. For example, the major goal of the education reform in 1980 was to ameliorate social ills associated with severe competition for college entrance. The school curriculum reflected this change and focused on integration of school subjects (e.g., integration of history and geography into social studies at the primary school level) and development of the whole person.

### ***The 1990s through 2000***

As the economy became more diversified and changed more quickly, it became less feasible and less desirable for the government to be engaged in private sector's economic activities and thus the need for manpower planning was less persuasive. Society also became more democratized, and the capacity of the civilian sector increased accordingly. The use of market forces in place of government planning was a logical next step for social intervention. Thus, after the fifth economic and social development plan (1982-1986), the Korean government ceased to initiate long-term macroeconomic plans.

For the education sector, this meant a shift of focus from expansion and a quantitative emphasis on manpower supply to quality, relevance, and excellence of education being provided. The corresponding change in the school curriculum can be best described as a learner-centered curriculum, where individual difference is respected.

### *2000 through the present*

It became clearer that the conventional strategy depending upon the massive inputs of labor and capital was no longer working for a knowledge-based economy. Such realization made the Korean government come to a conclusion that in order to secure new momentum for further growth, there should be more emphasis on human resources equipped with creative knowledge rather than increasing labor and capital input.

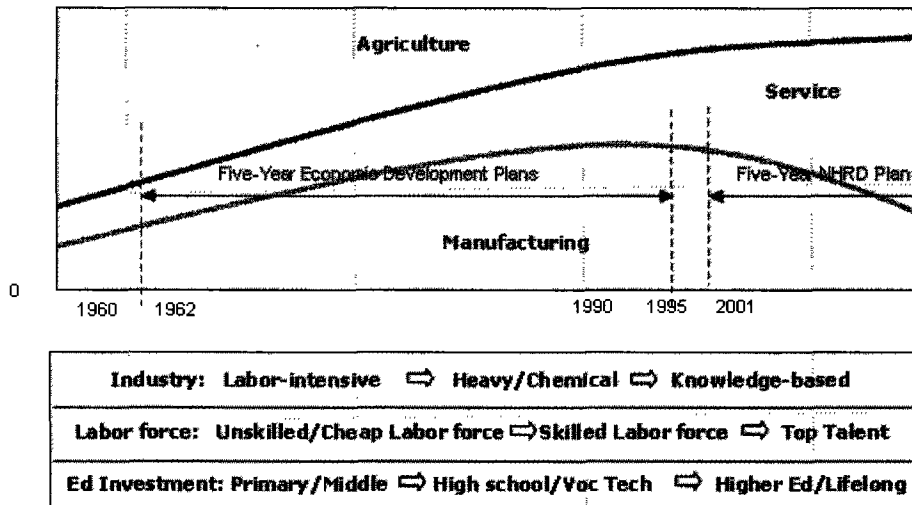
In this context, the Korean government developed a comprehensive strategic plan – i.e., the National Human Resource Development Plan – in 2001. Within the NHRD framework, primary and secondary education was understood as the critical stage to develop the basic knowledge and attitudes required for participating in social activities. It was declared that every child should be guaranteed to reach the basic academic achievement level as well as the standards of democratic social behavior.

The Korean government renovated educational administration so as to make individual schools more autonomous, while introducing an institutional framework that facilitates stronger ties between schools and local communities. A good example is “After-School Programs” that now almost all Korean schools are providing to students as well as local residents. Through After-School Programs, schools became more open to the society, and it became easier for the local community to get involved in school activities.

In order for Koreans to respond to the changes in labor market, policy emphasis was put on provision of lifelong vocational education and training. In particular, policy efforts were made to develop the curriculum of vocational high schools in response to the demands of businesses and industries. Universities have been encouraged to introduce more vocational training programs as well as lifelong learning for adults.

In recent years, strengthening the competitiveness of universities became important policy issue. Two ambitious projects have been implemented. First, Brain Korea 21 (BK21) was launched to develop world-class research universities and global talents in 2001. During the 1<sup>st</sup> phase of BK21 (1999-2005), US\$ 1.4 billion was invested to the selected universities. The 2<sup>nd</sup> phase of BK21 (2006-2012) is being implemented with investment of total US\$ 1.2 billion to selected university programs.

New University for Regional Innovation (NURI) is another important project to strengthen the competitiveness of local universities and have them to contribute to regional economic development. According to this project, total US\$ 1.2 billion is provided to the selected projects of local universities during the 2004-2008 period.



[Figure II-3] Changes in Industrial Structure and Educational Investment

## F. Challenges and Policy Directions

From the early 1960s to the late 1980's, the Korean economy grew on average 8% every year. Korea, however, was not so much successful in response to the globalization of economies, and the result was the foreign currency crisis in late 1997 and a subsequent economic downturn (see Figure 1). With all Korean's effort to overcome the economic crisis, the Korean economy got back on the right track to the new take-off.

Korea, however, is faced with another challenges that should be overcome to join the most advanced countries. Among the challenges, three factors are found to be important and influential in relation to education and NHRD: (a) ageing population and low birth-rate, which possibly undermine Korea's potential for further growth, (b) increasing global competition and rapid transition to a knowledge economy which might worsen job security, especially of unskilled workers, and (c) polarization and widening income inequality that might hamper the social stability.

Three policy directions are noteworthy. Korea's first endeavor at the beginning of the 21<sup>st</sup> century was to find the new driving force for national competitiveness. The Korean government found it from NHRD, which conceptually embraces education and emphasizes the linkage between workforce supply (education) and demand (industries). Making clear that in a knowledge-based economy, the high quality human resources of a country determines not only national competitiveness but also the quality of individual life, the Korean government changed the Ministry of Education (MOE) to the Ministry of Education and Human Resources Development (MOE&HRD) to effectively formulate NHRD policies in 2001. In addition, the National Human

Resources Committee was launched in 2007. The committee is chaired by the President, and is expected to strengthen cooperation among line ministries related NHRD policies.

Second, with the growing importance of early intervention to narrow achievement gap and ageing population coupled with weakening public faith in lifetime occupations, promoting lifelong learning for all people became another important policy agenda. Many policy efforts have been made to develop education policies beyond K-12 education. Investment in pre-school education has been increased. In-house training for workers has been encouraged to promote lifelong learning and voluntary competency building. Higher education opportunities for adult learners have also been greatly expanded through various lifelong learning policy measures including the credit bank system, the self-study system, cyber universities, etc.

Finally, with increased income inequality and polarization of the society, equity in education was considered as a means to promote social welfare and sustainable development. "Vision 2030," a long-term national growth strategy was established in order to pursue both growth and welfare in 2006. In this plan, educational equality was viewed as the key for social cohesion and sustainable development. Specifically, the "Education Safety Net" was introduced. In order to realize this idea, introduced was the "Edu-Welfare Zone," where disadvantaged students are taken care of with a variety of educational activities such as mentoring, counseling, cultural activities, etc. The government has also supported tuition for the economically disadvantaged K-12 students and help university students from low-income families to attend the universities by providing low-interest rate student loans. In addition, After-School programs is provided by almost all schools in Korea, and they play an important role in helping disadvantaged students who cannot afford to go to private institutions after schools.

## **G. Conclusion**

From Korea's experiences, the political commitment at the beginning of a national educational development plan is critical. It paved the way for a sustainable change and reform in education in Korea.

In case of Korea, the centralization of various development decisions at the initial stage was effective in formulating and implementing educational policies and programs. The Korean case, however, shows that the role of effective government should be to provide appropriate structure and resources to support educational institutions, but not to micromanage to hinder their autonomy and creativity.

The orchestration of a variety of policies within a solid framework of national policies was also critical. In Korea's case this has been done through the macroeconomic development plans – i.e., the five year economic development plans (1962-1995) and the national HRD plans (2001-present).

The timing and sequence of policy choices were also important in pushing the education frontier from the lower to the upper part of the system.

The Korean case shows that educational excellence and equality can be achieved together.

## **2. Development of Educational Management Information System (EMIS) in Korea<sup>2</sup>**

In this paper, I'd like to refer Educational Management & Information System (EMIS) as two separate systems in Korea, the Educational Statistics System (ESS) and the National Education Information System (NEIS). These two systems differ in many ways but share some common grounds.

### **A. Educational Statistics System (ESS)**

Korea has a long history of statistical data collection on schools. The Korean government has conducted its annual statistical data collection on schools and higher educational institutions since 1962. In the beginning, the whole process of data collection and analysis was done manually. In other words, they collected data using paper-and-pencil questionnaire once a year (usually in April, one month after the beginning of new school year) and produced a printed version of "statistical yearbook of education" using hand calculators.

#### ***Beginning of computerization (1998-1999)***

A sort of paradigm shift from the pre-computerization happened in 1997. Until 1997 the National Board of Educational Evaluation, now Korea Institute of Curriculum & Instruction (KICE), was in charge of the national educational statistics project. In 1997, the national educational statistics project was transferred to Korean Educational Development Institute (KEDI) and KEDI introduced computerized educational statistics system.

This new system was consisted of two parts, the data input and import system and the educational yearbook database system. The data input and import system was developed as a Client-Server(C/S) system which is based on off-line system environment. It was developed a bit differently for the pre-primary, primary, and secondary schools and for the higher educational institutions. For the pre-primary, primary, and secondary schools, the system was designed in a way that the schools send their data to 16 metropolitan and provincial offices of

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<sup>2</sup> This paper was presented by Hyun-Jeong Park, Professor in Seoul National University, Republic of Korea at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

education and then to KEDI. For the higher educational institutions, however, they send their data directly to KEDI. The educational yearbook database system was designed to automatize the whole process of publication of national statistical yearbook of education as well as 16 local statistical yearbook of education, one for each 16 metropolitan and provincial offices of education. This system converted the raw data in educational data input and import system into yearbook data. KEDI started to use these newly developed computerized ESS systems for the annual data collection and yearbook publication in 1998.

### ***Stablization of systems (2000-2001)***

Even though KEDI started its computerized system for data collection and yearbook publication in 1998, this system was quite unstable and worked with little regard to data verification and user friendliness, etc. It was after 2-3 years of experiences with these new systems that KEDI started to try to find more efficient and better ways to enhance its quality of data. To ensure high reliability and integrity of data, KEDI expanded data verification routine in whole system and introduced new web-based data collection system for the higher educational institutions.

### ***Optimization and advancement of systems (2002-current)***

Since 2002, the educational statistics systems were quite stablized their original version and started to expand their contents and service areas. I will examine the expansion of contents first and then strengthening of the service areas.

#### **1) Expansion of contents**

Basically the ESS was developed as a means of administrative data collection on formal educational institutions such as pre-primear, primary, and secondary schools and colleges and universities, etc. The only output was the publication of statistical yearbook of education. So the original version of ESS was consisted of data collection system for formal educational institutions such as pre-primary, primary and secondary schools and higher educational institutions and yearbook publication system. This data collection system was designed to use once a year and covered wide range of administrative details.

However, the system evolved to cover more policy relevant information such as school-to-work transitions. For the higher educational institutions, KEDI started a survey of college and university graduates asking their employment status targeted for the entire universe not as a sample survey. This survey was also run by a web-based data collection program. However, the difference is that this system was meant to provide year-round support to those who were in charge of data collection in colleges or universities, not just used once a year for the data



collection. They can use this system to manage the career counseling and employment status of their own students.

Recently, the ESS has confronted new challenges. Large part of administrative data collection for pre-primary, primary, and secondary schools are now covered by NEIS, which will be introduced shortly. In response to this, now the ESS is planned to connect to NEIS in order that the schools do not have to enter the same data twice. Also, the higher educational institutions has suffered from repeated request for statistical data from different institutions such as KEDI, Korean Council for University Education (KCUE), and Korean Council for College Education (KCCE) and etc. In response to this, KEDI has launched new data collection system for the higher educational institutions covering all the data collection from these three institutions, KEDI, KCUE, and KCCE so the colleges and universities do not have to enter the same data repeatedly.

Besides these challenges, the ESS expanded its contents over the administrative data collection for the formal educational institutions to administrative data collection for the lifelong education such as informal and non-formal educational institutions and household or individual sample surveys. Inclusion of the informal and nonformal educational institutions was to answer the changes of society. With the fast paced change in knowledge of the mankind, the days of school system being solely responsible for equipping people for the life have long gone.

The time has come when the lifelong education and training become the foundation of one's competitiveness and the government needs systematic and scientific information on lifelong education nowadays. So the informal and nonformal educational institutions cover cyber schools, private cram schools, lifelong education centers, vocational training centers, and privately owned culture centers, and etc.

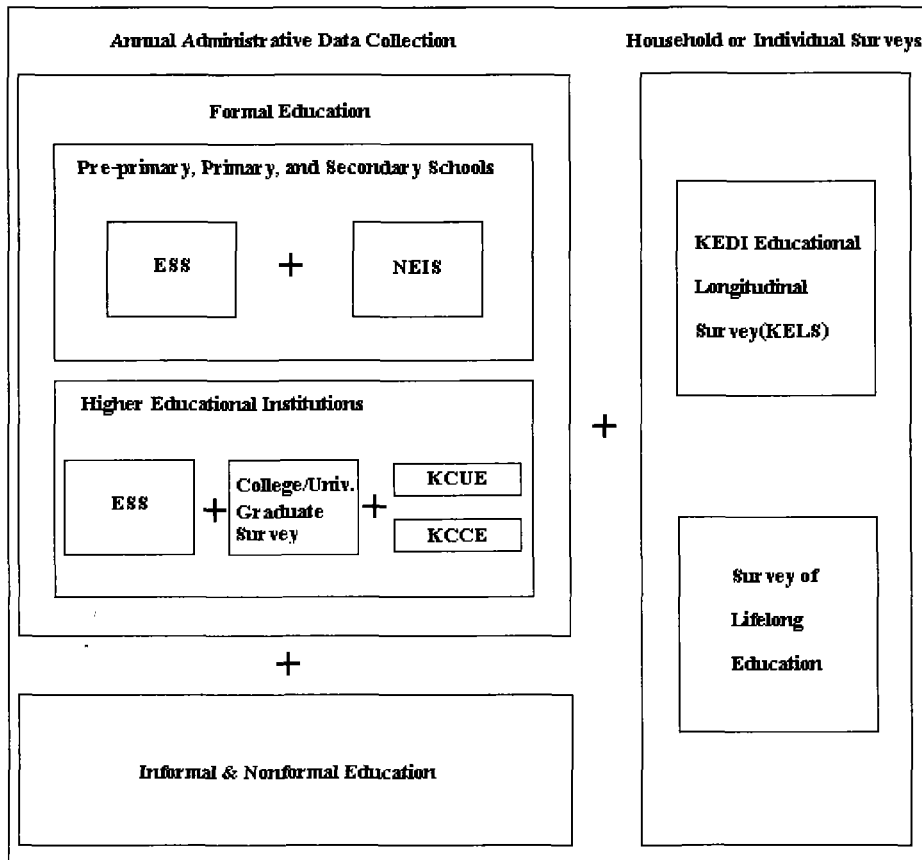
Also, ESS expanded its contents to cover more policy relevant surveys such as KEDI Educational Longitudinal Survey (KELS) and Survey of Lifelong Education. These sample surveys can provide much more affluent information on how education is processed in individual student and school levels in detail which administrative data collection cannot provide. KELS covers wide range of educational process variables with student achievement scores and started with a cohort of lower secondary school students in 2005. The survey of lifelong education is a household survey asking their lifelong education history in the last one year. Through these expansion of its contents, KEDI has tried to overcome the shortcomings of administrative data collection and support policy-based approaches to educational statistics program.

## **2) Expansion of data service**

KEDI has strived to enhance its quality of data service system. In the beginning, the only output of educational statistics program was the printed version of statistical yearbook of education. Now, KEDI provides a wide range of publications such as reports covering the analysis of trends and policy implications from the data, brief statistical handbooks and so on. All of these publications are provided on-line as well as off-line. Also, KEDI constructed a website which offers one-stop service for the statistical needs for education. This web site tries to offer a tailored service for individuals such as policy-makers and researchers.

### **B. National Education Information System (NEIS)**

Now, I'd like to introduce the National Education Information System(NEIS), which is another EMIS program in Korea. The NEIS is a nationwide education information system for constructing a computerized environment which over 10,000 primary and secondary schools, 16 metropolitan and provincial offices of education and their subsidiary institutions, the Ministry of Education and Human Resource Development are linked through the internet to share education-related information. A program for managing students' records on their health status, schoolwork and grades (previously managed by each school) used integrated method through the internet, it was constructed at the cost of 52.1 billion won in 2002. After NEIS was implemented, students do not have to go to their school to have a school record or graduation certificate issued, and parents can check on their child's attendance and academic record directly through the internet. In addition, the system enables the schools to share student data easily if a student transfers to another school or progresses to a upper-level school. It also simplified tasks related to entrance exams for college/university through convenient provision of entrance-exam screening data such as high school GPA and school activities record.



[Figure II -4] Expansion of contents of Educational Statistics System (ESS)

Before NEIS, 147 billion won was invested from 1997 through 2001 to build a CS(Client-Server) system which linked a teacher's PC and a unit school server through school network in order to put data together and manage all school affairs including school cumulative records. CS was, however, difficult to manage because there were only a few teachers with knowledge of the database operation system at a particular school, while NEIS, which can be controlled in an integrated way, is efficient and cost even less in its maintenance.

In the beginning, however, there was big dispute between the government and teachers union on the operation of NEIS. It was because NEIS covers personal informations of students and teachers and consequently it was indicated that the system can potentially leak personal information and human rights. In 2006, however, the NEIS is running in almost all schools in Korea. The NEIS is consisted of three areas, general administration area(21 modules for personnel, school finance, and so on), school administration area(physical exercise,

supervision, school meals), and school affairs area(school/academic affairs, admissions for higher-level schools, student health).

The development of the NEIS was as follows.

- Year 1997-2000 : Establishment of communication network and computer infrastructure
  - Development and of SIMS, a pre-stage program of the NEIS (1997)
  - Completion of development of nationwide IT infrastructure of elementary and secondary schools (2000)
- Year 2001-2003 : Activation of E-learning and establishment of NEIS
  - Development of two-stage educational informatization development plan
  - Operation of the NEIS general administration (22 areas) services(2002)
  - Operation of the NEIS school administration (5 areas) services(2003)
- Year 2004-2006 : Professionalization by areas and strengthening of service system
  - Operation of on-line document service for university admissions
  - Operation of Home-Edu civil service(2005)
  - Operation of the NEIS school affairs (3 areas) services(2006)
  - Operation of on-line services for the parents(2006)

I hope that I could have given a large picture of EMIS in Korea how we have developed these systems and what kinds of challenges we have met and how we answered.

### **3. ICT Development in Korean Education<sup>3</sup>**

#### **A. Introduction**

Compared to fifty years ago, Korean has achieved more than 100 times of economic development and education was one of the most important elements which made it possible. While considering Korea's many limitations such as poor natural resources, relatively small land, and even having total destruction with Korean War, the role of education for Korean economic development is more meaningful. Recently, for scholars and administrators from the developing countries, Korean education is gaining more attention with the advanced implementation of ICT in education. For example, according to

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<sup>3</sup> This paper was presented by YoungHwan Kim, President of Institute of APEC Collaborative Education (IACE) at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

OECD (2005), Korean students' self-efficacy using ICT in learning (71.1%) is higher than those of average of OECD member economies(64.2%) in primary and secondary education. Also, Korea was ranked second to Finland in the area of using ICT for students' systemic learning in primary and secondary education (OECD PISA, 2003). These trends are same with the Korean higher education also.

After interviewing the foreign inquirers on the Korean ICT in education, it was possible to summarize their divergent questions on ICT development in Korean education into the three questions: "What is the process of the ICT development in Korean education?" "What was the role of ICT in Korean educational development?" and "What are the futuristic educational issues for the future of Korean e-Learning?" It is not an easy job to make clear answers for the questions shortly. However, of course, it is not impossible also.

## B. Process of the ICT Development in Korean Education

When we talk about the process, we can take two different approaches: one is a procedural and the other is more holistic with continuous causal relationships (with many sets of causes and results). In many times, the procedural approach seems to very clear for initial understanding. However, for the deeper understanding and inquiry, the latter approach is much more helpful in many cases.

[Table II -4] History of Korean ICT Education Development

Years	Key issues and activities
1997-2000	Comprehensive Plan for ICT in Education (CPIE): National master plan for "the most wired nation in the world." It was the corner stone of current e-Learning. <ol style="list-style-type: none"> <li>1) Infrastructure for every classroom with Internet access and computer</li> <li>2) First ICT training for all teachers</li> <li>3) Establishing Cyber universities</li> </ol>
2001-2004	Focused on <ol style="list-style-type: none"> <li>1) Integrated use of ICT in curriculum with the <i>comprehensive plan for Teaching and Learning Center</i> and the <i>Comprehensive Plan for Library</i> for state, local and school level.</li> <li>2) Information distribution and sharing for the best practices</li> <li>3) Second ICT training for teachers</li> <li>4) <i>Master plan for reducing private tutoring</i> with Educational Broadcasting System (EBS)</li> </ol>
2005-current	Focusing on more systematic change in school education with <ol style="list-style-type: none"> <li>1) e-Learning and u-Learning</li> <li>2) Self-directed learning</li> </ol>

For the first approach, Jun and Kim (2005) provided comprehensive analysis for the three stages of ICT development process in Korea. However it may not clear enough to understand how the ICT in Korean education could be expanded and developed so quickly. From here, let's take a different view for the ICT development process in Korea. It is causal relationship approach.

First, who was the stakeholder of the plan? The stakeholder of the CPIE was the Korean MOE&HRD supported and/or associated with the other ministries such as Ministry of Information, Ministry of Science and Technology, Ministry of Labor, Ministry of Industry and Resources. It was not a just educational change but a total national systematic change with IT. Fortunately, the minister of MOE&HRD had been a chair of the ministers as a deputy prime minister. Most of the times, the ministers could cooperate and the other times they competed each other to take leadership in using ICT for human resources development in many different areas.

Second, why was the Comprehensive Plan for ICT in Education in 1997 (CPIE)? In 1997, Korea was in the middle of IMF and needed to find an alternative economic paradigm which was different from "Industrial Paradigm" and Korea took the paradigm of "Knowledge-based society." ICT was an excellent alternative for Korea at that time. As better infrastructure and human resources are needed in order to take the new paradigm in Korea, the CPIE could become the key answer for that.

Now we can ask the third question. Even the ministers and central government led the ICT innovation proactively, how could it happen so quickly and efficiently? Fortunately, from 1995, there was already social consensus about using ICT in education which was led by the cooperation of big three Korean news paper companies and government policy. From 1995, the Korean big three news paper companies (Chosun, Jungang, and Donga) started a new nationwide campaign to expand ICT in education. More specifically, each company selected one level of education (Chosun-elementary, Jungang-middle, and Donga-university) and they made an intensive effort to advertise and indoctrinate the importance of using ICT in education at each level. Of course, they had an ulterior goal for possessing digital news market in advance. Naturally, two big public television providers (KBS and MBC) also joined them. One by one, many different NGOs including academic associations also ran together with the press. It was a beautiful and effective tripartization among government, the press, and NOGs with academic associations. Also, it was a great chance for industries including hardware and software companies which had invested significantly on the IT already in advance. In 1997, the Comprehensive Plan for ICT in Education (CPIE) could be launched with the maximum emotional and financial supports.

There was another important activity in 1997 about higher education. It was the “National Cyber-University Competition” led by MOE&HRD and almost all Korean universities took part in the competition as a member of consortium and/or individual entry. Government promised a significant financial and administrative support for the best five cyber-universities, even it was not accomplished. After all, with the competition, it was possible to have very strong ICT infrastructure not only in universities and but also in life-long education system in general.

Now, we can ask the fourth question: “How can it be continued from 1997?” The answer is “Master Plan for Alleviating Private Tutoring Cost”(MOE&HRD, 2004a). When we talk about the key point to success for Korean economic advancement, we have to count the “historical and cultural passion for education” of the general people in Korea. For Korean parents, traditionally, it was a mission to compensate everything for children’s education and this tradition introduced many critical problems related with private tutoring cost for a long time also. We knew that we needed to do something to reduce the private tutoring cost not only for sustainable economic development but also for the social inclusion especially between the rich and the poor. Since the cost of private tutoring was too expensive, it expanded the gap between the wealthy and the poor in education. This tendency gave a good chance for EBS(Educational Broadcasting Service) with the Master Plan for Alleviating Private Tutoring Cost.

*The plan initially brought about EBS Programs for College Scholastic Ability Test (CSAT), and drove more fundamental measures, which represented by ‘E-Learning master Plan for Elementary-Secondary Education’ (MOE&HRD, 2004b)(Jun & Kim, 2005; p. 26).*

There should be more detailed discussion to enlighten the general process of Korean ICT development in education especially focused on more causal relationship. History is a process of challenge and a response.

### **C. Role of ICT in Korean Educational Development**

Since 1995, what was the main role of ICT for Korean educational development? Before finding answers for it, we need to think about the main characteristics of ICT first. The key concept of ICT is “enhancing communication among people with divergent type of information and advanced convenient technology” and it would be the final role of ICT in general education.

However, on the developmental process in Korean education, ICT had different roles. In the early stage (1995-2000), ICT itself was a goal. In this period, ICT was a lighting rod which can gather potential powers from the various resources



such as the press, academic associations, governmental policies, industries, and general parents' opinions. Since the goal was very clear for every Korean, it was relatively easy to make synergy for using ICT in education.

In the second stage, between 2001~2004, the role of ICT was changed into methodology for gathering and distributing the educational resources and implementations of best practices as well as volunteer participation to answer for the educational social calling. Actually, volunteering could be the best way to protect the human spirit and human values not only from the problem of economical disparity but also from the digital divide, now and into the future (Kim, 2005). In this period, ICT was a guardian of establishing many teachers' on-line communities such as Indischool<sup>4</sup>, Kyocom<sup>5</sup>, EDUNET<sup>6</sup>, and APEC Learning Community<sup>7</sup> (Kim, Lee & Choi, 2006).

In the third stage (after 2005), the main role of ICT in Korean education was a supporter for learning and voluntary participation especially at individual level. UCC(User Created Contents) is a good example of the individual level activities. Also, this is a good stage to have less centralized educational policies by sharing more duties and responsibilities with local governments.

#### **D. Future Issues for the Sustainable Development of Korean Education with e-Learning**

There can be many issues for the future of Korean education especially with e-Learning and/or ICT. Kim (2007, pp. 66-78) summarized the factors for the sustainable development of Korean education system with e-Learning as follows:

First, it is undesirable thing to suggest future education based on one paradigm, methodology, or philosophy, but it seems to be appropriate to consider multiple paradigms and methodologies in presenting suggestions for future education. In other words, we need to take attention on the fact that current education is centered on the issues of economic dominance, and in particular, of the fact that OECD is aggravating such a situation. It is certain that human resources development is important for sustainable economic growth in the information-based and future society. But it does not mean to regard developing human resources important only. In addition to economical implications, we must comprehensively consider what psychological, social, and environmental changes lead us to ultra knowledge-based society can have on the lives of

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<sup>4</sup> <http://www.indischool.com>, middle and high school teachers' on-line community

<sup>5</sup> <http://eduict.org>, elementary school teachers' on-line community

<sup>6</sup> <http://edunet4u.net>, government supported on-line community for teachers

<sup>7</sup> <http://alcob.com>, Supported by APEC and Korean MOE&HRD, International ALCOB teachers' on-line community. ALCOB=APEC Learning Community Builders

human beings, and its outcome should bring economic development and enhancing social welfare.

The second task for future education is to consider and include the ways to live with other foreign countries' people harmoniously since e-Learning opens the gateway to global society widely. In particular, there must be an international research with all of advanced, developing, and underdeveloped economies, and international cooperative activities that put the research into action. Furthermore, digital and knowledge divides must be resolved locally and internationally.

Desire for volunteer work is almost the only positive mechanism that the human race gained after they escaped from the threats of meeting conditions for basic survival. Fortunately, volunteer activities in various forms are continuing around the globe recently. Green Peace that protects the environment, Habitat where members go to underdeveloped economies and build houses at their own expenses, Lions Club and Rotary Club that provide scholarships and self-development expenses for students in those member economies, the projects of the Consortium for APEC Cyber Education Cooperation (ACEC: <http://goacec.com>) dispatching the ALCoB Internet Volunteers (AIV) are good examples. The meaning and spirit of such activities should be spread to the students of elementary, middle, and high schools. Internet and cutting-edge information communications technology (ICT) will serve as important tools in vitalizing such volunteer activities.

Third, although utilizing e-Learning and u-Learning via the Internet is needed, it should be connected with face-to-face activities or personal activities. This is because the ego that has expanded in a certain area in the cyber space desires to check itself through actual activities. In addition, psychologically, indirect experience in the cyber space is completed by having direct experience or reconciliation. Why else then would people go to the zoo or the safari to see animals such as elephants, zebras, and lions that they have already seen precisely through various multimedia, TV, movies, and games? The fact that activities on the cyber space is extended to face-to-face activities indicates that in the end, people are encouraged, inspired, and taken accountable for their actions by meeting face-to-face for the activities they engaged in the cyber space.

Fourth, it is requested to build nature friendly schools or schools located within the nature. After studying in a school located in the downtown area, the students can take a lesson in an alternative school mentioned above. Of course, alternative schools can be supported by a system using mobile technology. For the time being, I will call such alternative school in nature as "Edutainment Park(or EduPark)." EduPark is characterized by a joint community consisting of parents, students, and teachers, state-of-the-art

technology, natural environment, e-Learning, physical activities, fun games and learning, and conversation and participation.

Fifth, school education should return to a more human-centered and value-centered education. It is important to lay strength on the human resources development for member economies' economic development in education curriculum. However, schools should make and provide education on an alternative paradigm that can improve the endless consumption-centered lifestyle leading to environmental degradation, destruction of human nature and depriving modern men of freedom, self-concentration, and independence. Through emphasizing ethical and moral education, learners can escape from excessive desire for consumption and pursue higher quality of living.

Last of all, while using e-Learning and on-line learning community, there is a need to set up a place to deliberate education with education related scholars, teachers, parents, learners who shape and share the vision of future education together. Banathy(1999), by mentioning the new education system, said that it is important to make a network among various forms of education service systems (Physical, psychological, mental resources for the health of human race), public education institutions including volunteer work agencies, and private education institutions. For this, it is necessary to establish a space for major discourse while establishing and operating an on-line education community on an international level and utilizing the outcome from such efforts. Spaces for direct experience must be set up where on-site activities such as seminars, exhibitions, group discussions, and visits can take place.

Also, it is desirable that accumulated experience, knowledge, especially the knowledge on public education be handled on a non-profit perspective rather than an educational business perspective. This is especially true for public education. In this sense, the spirit of disclosing and sharing sources, like what LINUX is offering, should be promoted. Also, there must be a system to share information and knowledge among public education institutions, and such efforts should be expanded around the globe in the future. However, for the successful operation of such sharing system, trust and accountability between participating institutions must be built first. Without trust and accountability, it is more than certain that the database will be filled with miscellaneous data that any person can gain anywhere, anytime through Internet surfing because each institution will compete to collect data as fast as they can in order to fulfill the quantity allocated to each. High quality and refined data and knowledge should be collected. To this end, an international school network must be established which consist of excellent teachers, previously-mentioned excellent schools where participants can exchange excellent knowledge and know-how, and the schools equipped with facilities for joint activities, idea, belief, and support system. Already in Korea, there is a good example of such system, "EDUNET," where education related materials and various database are mounted on one

public network so that those engaged in education can conveniently use and share useful information. We are facing the phase where we need to find useful tips that can be shared internationally gained from the know-how while operating EDUNET, and need to exert joint efforts to revise, supplement, and share know-how on an international scale.

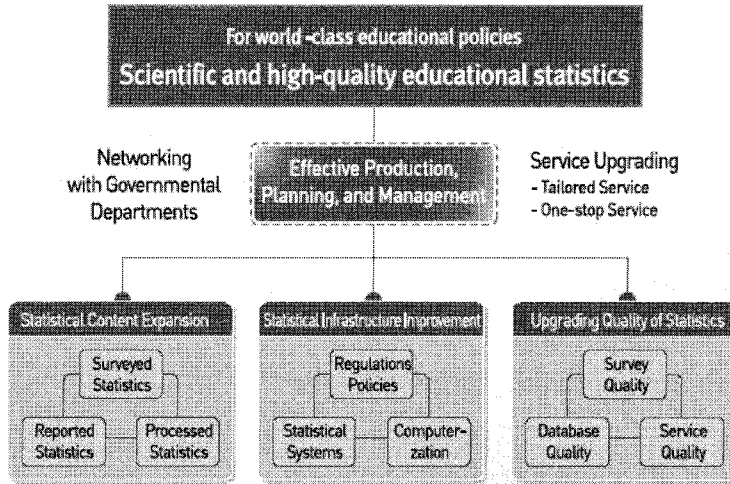
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## 4. Tools and Models in the Use of ICT in Education Planning and Management<sup>8</sup>

### A. Education Statistics in Korea

#### 1) Vision



#### 2) Mission

- To Produce high-quality and reliable statistics
- To Provide research data in a scientific manner
- To always improve on client-centered service

#### 3) Primary functions & affairs

- a) Research and Planning
  - Establishment of Short-term/long-term planning on educational statistics
  - Support for inter or intra institutional cooperation for national educational statistics
  - Cooperation with institutions which produce educational statistics
  - Research for policy making on educational statistics

<sup>8</sup> This paper was presented by Chang Hwan Kim, Director General of Center for Educational Statistics, Korean Educational Development Institute(KEDI) at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

#### b) Survey

- Longitudinal survey of education, Carrying out polls on education, Surveys on lifelong learners, Basic educational statistics, Higher educational statistics, Lifelong educational Statistics, School to work transition statistics, Educational policy statistics, Survey on key educational statistics e.g. on HRD

#### c) Analysis

- These are the kinds of Analysis we perform: Educational statistic analysis, Analysis on educational policy statistics, Education projection statistics, Statistic-related publications and distribution

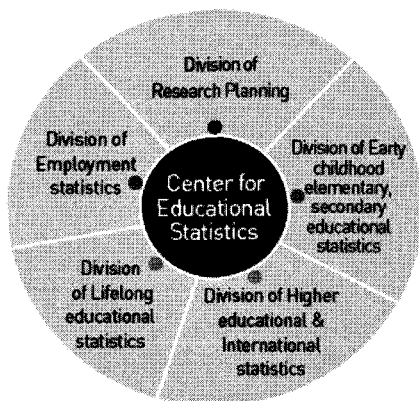
#### d) Service

- Processing of educational statistics and services
- Operation of webpage services and call center

#### e) International Affairs

- Cooperation with international organization such as OECD, UNESCO, APEC
- The development and publication of international education indicators

### 4) Organization



- Division of Research Planning
  - Planning
  - Research
  - Networking with educational institutions
- Division of Early childhood elementary, secondary educational statistics
  - Survey on early childhood, elementary, secondary educational statistics
  - Operation of call center
  - Management of webpage
- Division of Higher educational & International statistics
  - Survey on higher educational statistics
  - Operation of higher educational statistical systems
  - International statistics
- Division of Lifelong educational statistics
  - Survey on higher educational statistics
  - Inquiry of lifelong learners
  - Operation of lifelong educational statistical systems
- Division of Employment statistics
  - Survey on employment statistics
  - Linking analysis of employment statistics
  - Operation of employment statistical systems

### 5) Key publications

- ① Statistical yearbook of education: a comprehensive report on national educational statistics
- ② Report of analysis on vital educational statistics: trends and implications gathered from the statistics

- ③ Brief Statistics on Korean education (Korea and English version): a handbook of essential educational statistics
- ④ Statistical yearbook for employment: employment statistics of higher education graduates
- ⑤ Report of analysis on employment statistics: trend and implications of the key employment statistics
- ⑥ Statistical yearbook of lifelong education: a statistical report on lifelong education
- ⑦ Edited report of (Education at a Glance OECD Indicators)
- ⑧ Translated report of (Education Policy Analysis)
- ⑨ Education human resources in Korea:  
a report on various indicators of HRD such as socioeconomic backgrounds, infrastructure, development, implementation, and utilization of HRD

## 6) Education statistical service



Only Providing in Korean and English version under building  
<http://cesi.kedi.re.kr>

## **B. The Use of ICT in Education Statistics**

### **1) Data collection: Computer (CD) used survey**

#### **a) Purpose**

- Provide basic statistical data for framing educational policy and creating fundamental education research
- To do that, the research takes counts of students, teachers, facilities, funding and others for every school and academic institute and all educational administrations for all the cities and district

#### **b) Overview**

- 1997: Educational Statistics service was transferred KEDI from KISE(Korea Institute of curriculum & evaluation)
- 1998 : Data Collection System using Computer system was designed and operated by KEDI
- 2003: Because of changing curriculum, Data Collection System was upgraded.

#### **[Overview of Educational System in Korea]**

<b>Age</b>	<b>Educational System</b>
Under 8	Kindergarten
8-13	Elementary School
14-16	Junior High School
17-19	Senior High School
Over 20	College, University

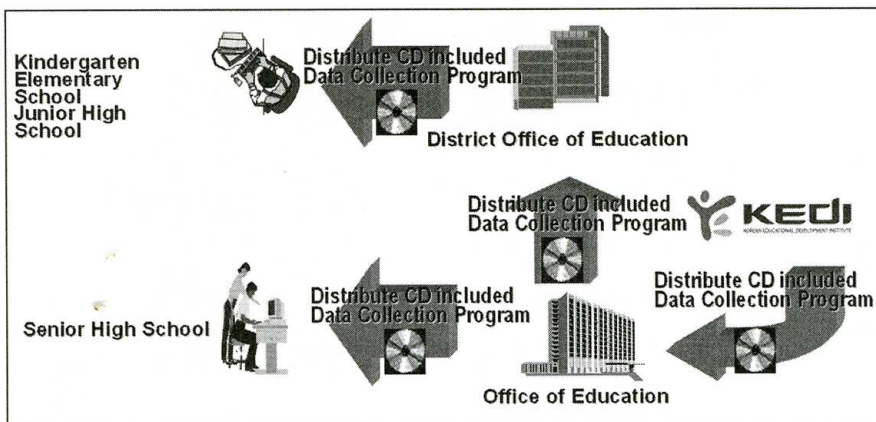
#### **[Overview of Structure of Educational Administration]**

- MOE : Ministry of Education and Human resources development
- 16 Offices of Education
  - Jurisdiction over Senior high schools and District Offices
- 180 District Offices of Education
  - Jurisdiction over kindergarten, elementary and junior high schools

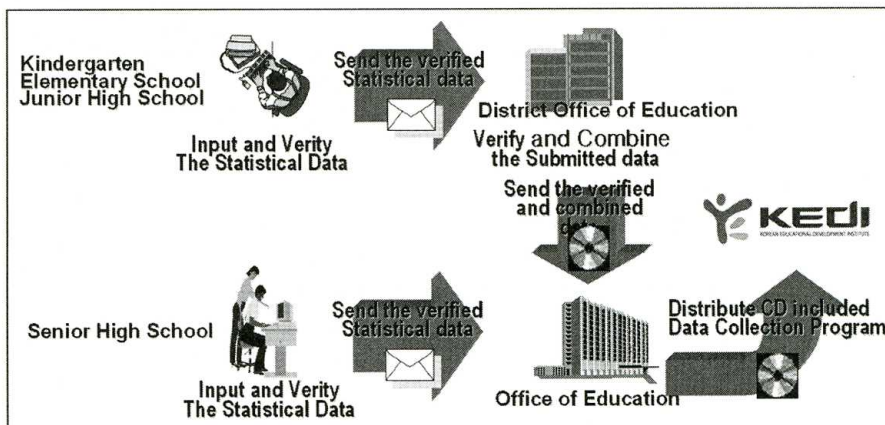


### c) Data collection working flow

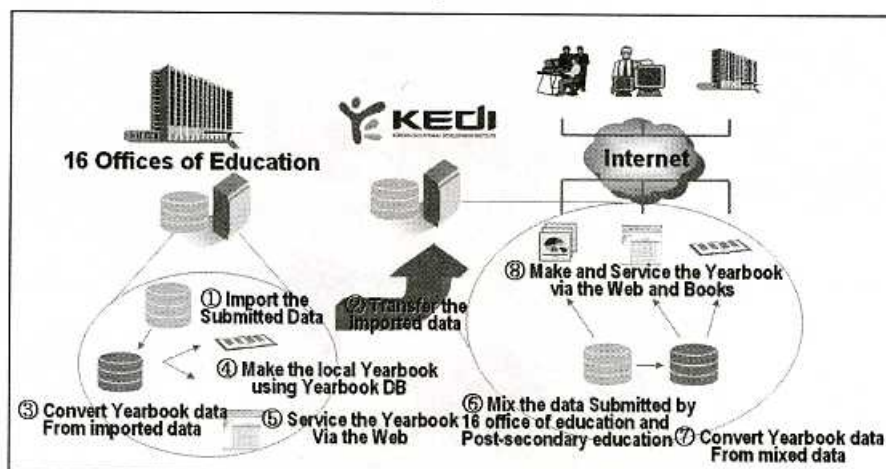
#### [Distribute the Data Collection Program]



#### [Receive the input Data of April 1<sup>st</sup>]



## [Making the Statistical Yearbook]



### d) Educational statistics system

- Separated at 2 part
  - Data Input & Import System
    - Using at school, District and local office of education
    - Input, Verify and Import the collected data
    - Operate on personal computer with no regard to network
    - However, To import, network is necessary
  - Education Yearbook System
    - Being used to make yearbook and local yearbook
    - Converting raw data into yearbook data
    - To operate, Server(Unix) and Client(PC) is necessary

### e) Contents of collected data

- Information of school
  - Basic Information
    - School name, address, telephone number
  - Foundation information of school
    - The Present condition of Foundation Form(Public or Private), juridical person and so on
  - Fluctuation of school
- Information of Teacher
  - Basic information of Teacher
    - Teacher name, Age, Status, ...
  - Experience information
  - Certification information
  - Training information
  - Payment grade information
  - Fluctuation information

- Information of Student
  - Collect aggregation data, not raw data
  - The number of Classes and Students
  - The number of Admissions
  - The number of Graduates, employees and advancements
- Information of facilities
  - Area status of School
  - Buildings status of School
  - Energy usage status of School
  - Cool and heating status of school
- Information of foundation
  - Budgets & Balance
  - Expenditure status
  - Revenue & expenditure of local education budget

## 2) Data collection: Internet survey

### a) History

#### *Pre-computerization (1963~1997)*

- Worked manually
- Charged by the National Board of Educational Evaluation (Korean Institute of Curriculum & Evaluation, current)

#### *Beginning of Computerization (1998~1999)*

- Introduced computerized system for survey & analyzing
- C/S based off-line system environment

#### *System Stabilization (2000~2001)*

- Ensured reliability, validity and integrity of data, and accuracy of analyses.
- Introduced the Web-based on-line system (partially)

#### *Establishing Advanced System (2002~current)*

- Established the Web-based on-line system
- System integration: related systems in KEDI & other organizations.
- Implemented SOD (Statistics on Demand) service
- Implemented forecasting system for statistical information of National Human Resources

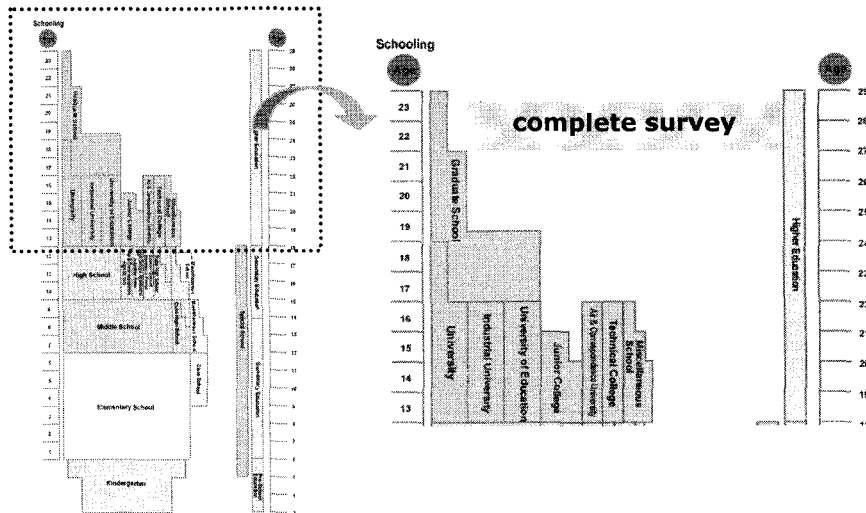
### b) Overview

- Purpose
 

To make statistical information available for policy decision-making and educational researches
- The legal base

- Presidential decree (44-3, No. 18594), the commission of administrative authority
- Instructions of the Ministry of Education & Human Resources Development (No. 620), collecting education statistical data

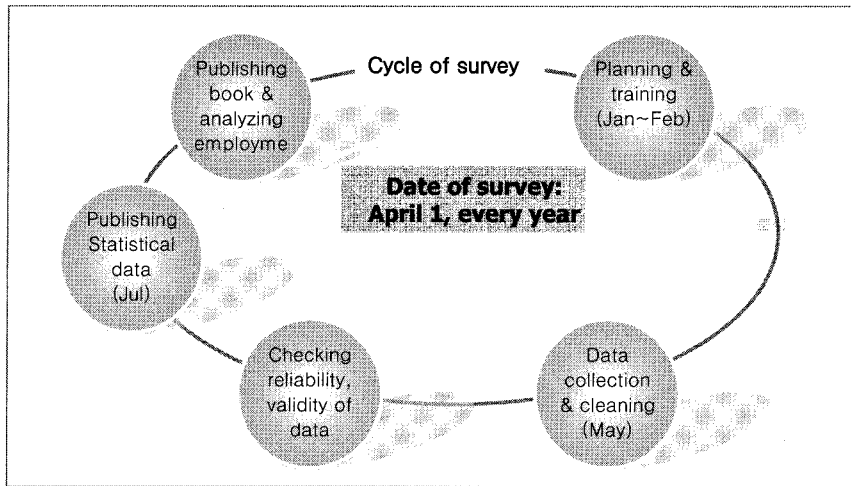
#### ■ Target of Survey



#### ■ Target of Survey

- The whole institutes of higher education that are authorized by MOE in Korea
  - University (193 sch.)
  - Junior College (160 sch.)
  - University of Education (12 sch.)
  - Air & Correspondence University (1 sch.)
  - Industrial University (18 sch.)
  - Technical College (1 sch.)
  - Cyber College & University (17 sch.)
  - College in the Company (1 sch.)
  - Miscellaneous School (5 sch.)
  - Graduate School (1022 sch.)
  - Graduate School College (34 sch.)
- Higher education institutions for special purposes are excluded (e.g., National Police College, Military Academy, and so on)

## ■ Cycle of survey



### c) Process & method

#### ■ Survey Area: School Information

- Location
- Type of school
- Established date
- Manager responsible for inputting data
- Etc. 20 items totally

#### ■ Survey Area: Study Subject & Department

- Subject name
- Department name
- Academic Field

#### ■ Survey Area: Student

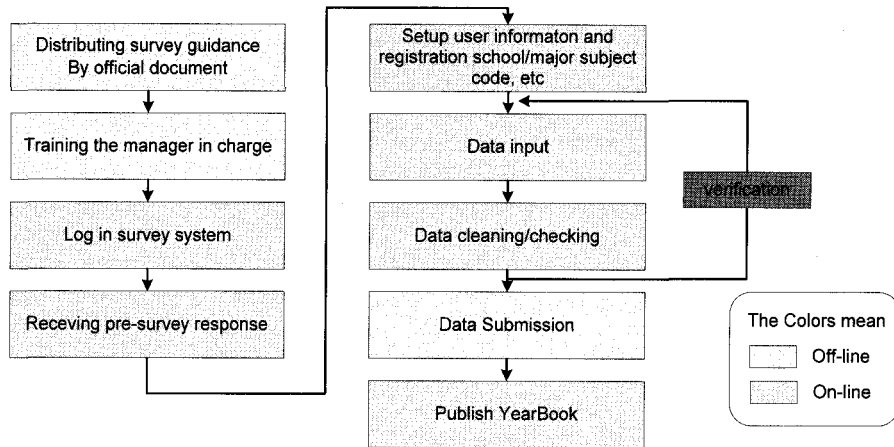
- Enrollment (Students enrolled & students on temporary leave)
- Number of Students by Age & Gender
- Number of Freshman by Age & Gender
- Number of Graduates by Age & Gender
- Graduates by Employment & Advancement
- Graduates who continued to Higher schooling by institutions
- Foreign Students
- Students Supported by scholarship & Tuition Fee Exemption
- Etc. 16 domains, 73 items totally

#### ■ Survey Area: Faculty

- Faculty Member Lists
- Faculty Members & Assistants

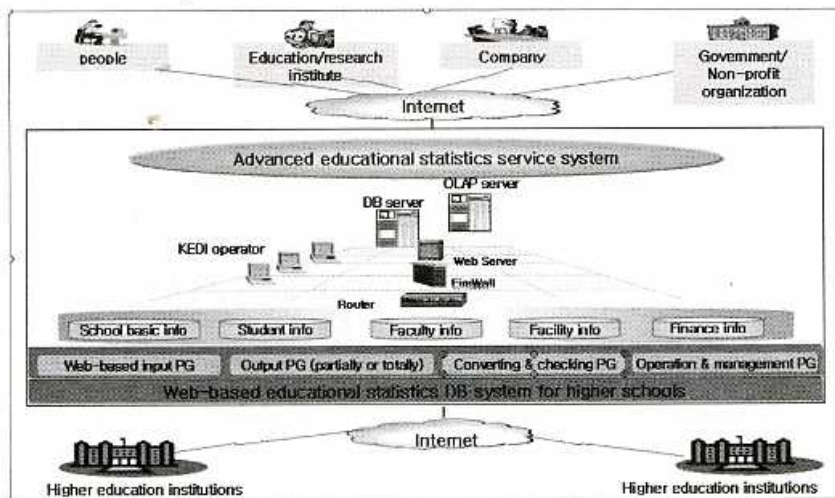
- Foreign Faculty Members by Nationality
  - Clerical Staffs
  - etc. 5 domains, 49 items totally
- Survey Area: Facility
- School site
  - Building
  - Library
  - Computers in school
  - Etc. 6 domains, 195 items totally
- Survey Area: Finance
- Budget & settled accounts of school foundation
  - Revenues & expenditure of school supporting associations budget
  - Annual tuition fees
  - Budget & settled accounts for operation of funds in private higher education institutions
  - Etc. 6 domains, 112 items totally
- Survey Area: Role (1)
- The KEDI administrator
    - Master architect of system & operation for survey
    - Management code (school, department or study subject, ...)
  - The KEDI operators
    - Maintaining the survey system
    - Management master manager for each school
  - The manager responsible for inputting data
    - Management manager for each part
  - The chief officers
    - Accessing data of their schools

## ■ Procedure



## d) System architecture

### - Overall System structure



## e) Products

### ■ Publication (every year)

- Statistical Yearbook of Education (BOOK)
- Statistical Yearbook of Education (CD-ROM)
- Statistical Analysis Book of Education
- Brief Statistics on Korea Education (Korean & English)
- Indicators of Korean Education
- Education & Human Resources in Korea
- Tertiary Education in Korea

- Education at a Glance OECD Indicators

### 3) Data dissemination (Data Service)

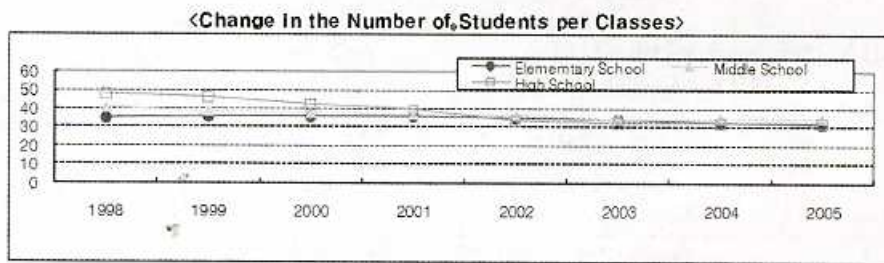
eg. KEDI/CESI Homepage at <http://cesi.kedi.re.kr>

## C. Education Statistics and Education Planning

### 1) Data based education planning and management

#### a) Significant improvement of educational condition

- Sharp Reduction in the Number of Students per Class by Completing 7.20 Educational Condition Improvement Project('04)
  - Input \11.5 trillion during '01 ~ '04, Establish 1,130 schools, Increase 14,678 classes



- Internet Connection in Schools Nationwide, jump to e-learning leading country(world 5th in preparation, '03)
- Introduce direct election of superintendent and educational committee members and convert education committee to provincial permanent committee by Amending Law on Local Educational Autonomy('06. 12)
- The way to expand local educational budget
  - ※ Local education budget grant rate 19.4% → 20.0%('08)

#### b) Generalization of higher education

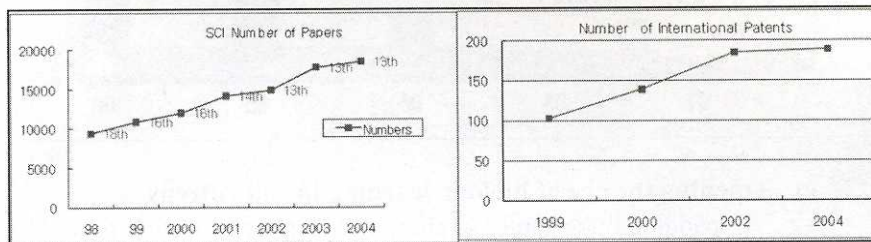
- Generalization of higher education by achieving world's highest level of university entrance rate(82%)
  - ※ University Entrance Rate : 27.2%('80) → 68%('00) → 82.1%('06)
  - ※ The percentage of school attendance in 15-19('06): Korea 85.2%, USA 76.5%, OECD average 80.5%
- Making the effect on enhancing research ability of university prominent
  - Successful completion of the first stage of BK21 project('99 ~ '05, \1,340 billion) for training high level human resource and



promotion of the second stage of BK21 project('06 ~ '12, \2,030 billion)

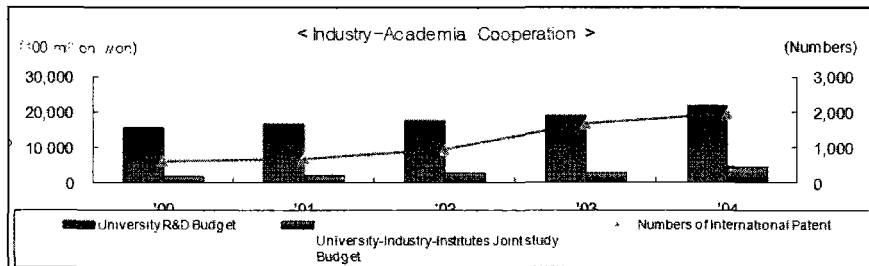
※ The number of papers published in SCI journals and the ranking of Korea : 9,444(18th, '98) → 12,013(16th, '00) → 23,515(12th, '05)

※ The number of the first stage BK21 Science & Technology International Patents: 103('99) → 198('05)



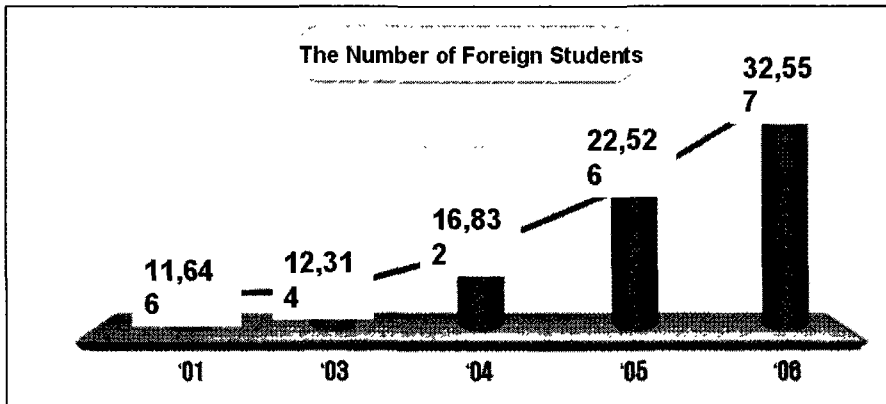
### c) The state of industry-academia cooperation

- Establish a new Industry-academia cooperation system to enhance appropriateness of university education for industry
  - Introducing School Enterprises('04), and Industry-academia cooperation foundation('04) by amending Law on Promotion of Industrial Education and Industry-academia cooperation('03)
  - ※ School Enterprises(13 high schools, 37 universities), Industry-academia cooperation foundation(333, 93%, '05), Industry-academia cooperation Universities(23)



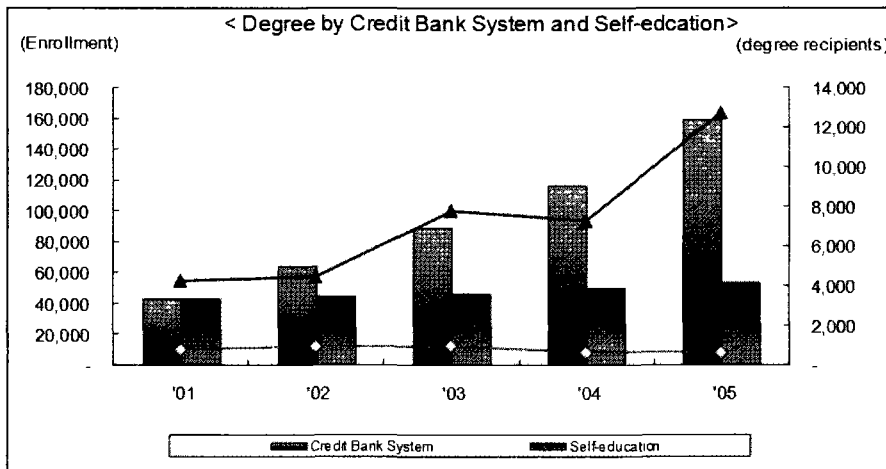
### d) The number of foreign students

- Establish and promote 『Study Korea Project』 ('04.11), cooperating with universities, to attract 50,000 foreign students by 2010



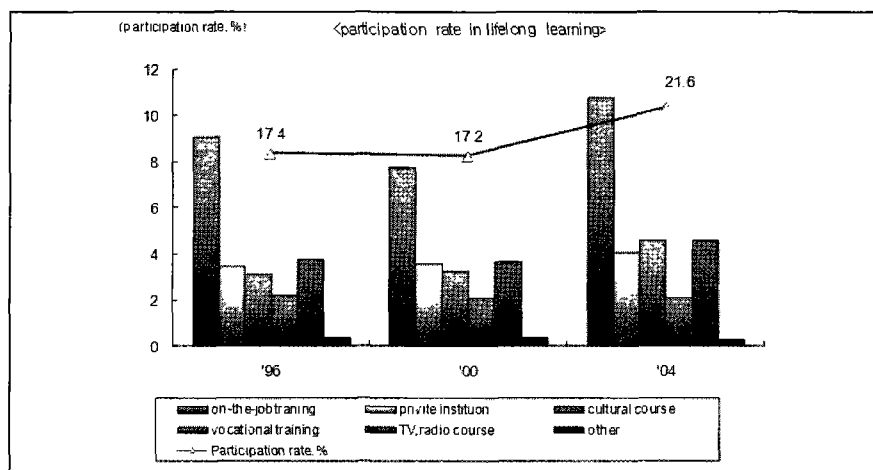
**e) Opening the era of lifelong learning for all citizens**

- Expanding opportunity of alternative higher education for adults by Credit Bank System, Bachelor's Degree Examination Program for the Self-educated, and Cyber University.



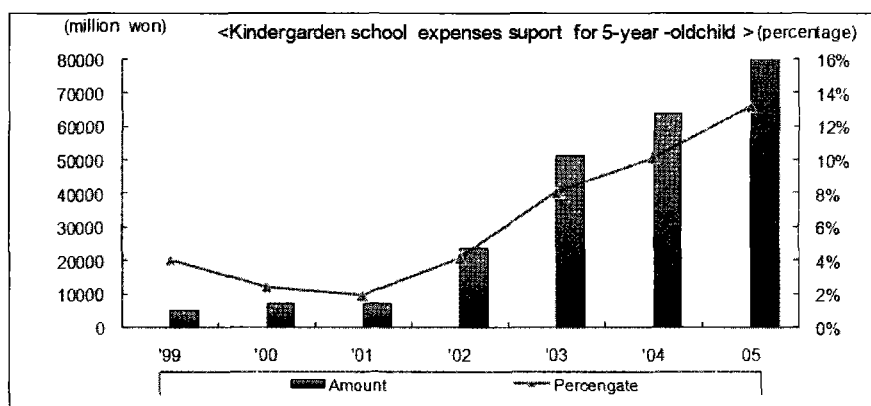
**f) Participation rate in lifelong learning**

- Enhancing lifelong learning by promoting E-learning, Business Training, Lifelong Learning Festival with local residents, and Lifelong Learning City
  - ※ Lifelong Learning City: 3('01) → 11('03) → 33('05) → 57('06) → 100 Local Bodies('08)



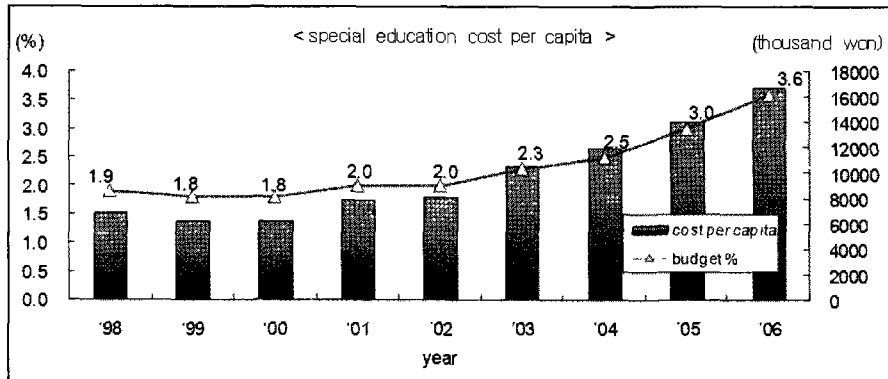
**g) Strengthening educational welfare policy to secure the right to education for the underprivileged**

- Expanding aid for education fee of 5-year-olds of low income and providing aid graded education fee for 3 and 4-year-olds('04)
- ※ Supporting urban worker families of income of under 90% average(5-year-olds) and under 70%(3 and 4-year olds, '06)



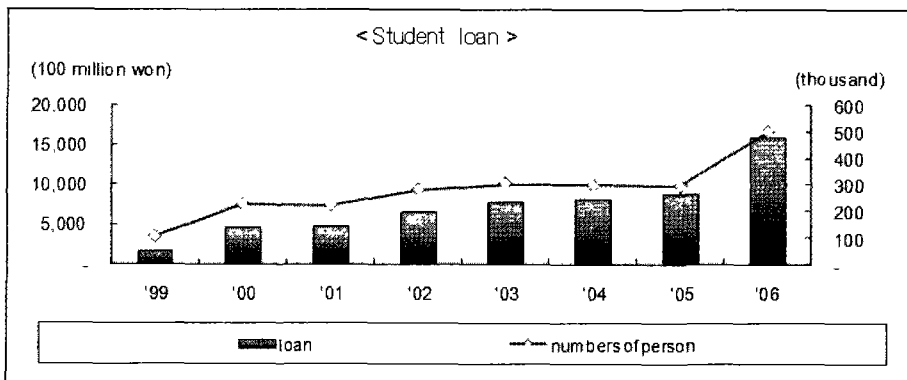
**h) Special education cost per capita**

- 「Comprehensive Plan for Special Education Development」 ('03 ~ '07)
- Supporting education fee for Infants with disabilities, expanding special education institutions, and establishing hospital school.



### i) The state of student loan

- Securing the opportunities of higher education for all who are able to education
  - Starting student loan guaranteed by government(since fall semester of 2005) and introducing college labor scholarship system(2005)
    - ※ The number of students taking student loan:  
303,000, ₩74.7 billion('03) → 514,000, ₩1.6 trillion('06)
    - ※ Recipients of college labor scholarship: 4,000, 8 billion('05) → 5,000, 10 billion('06)



### 2) The sse of ICT in education planning

eg. KEDI/CESI Homepage at <http://cesi.kedi.re.kr>

### **III. Current Status of Adopting ICTs in Korean Education**

As part of the Study Visit Programme, field visits were arranged. The purpose of the visits was to give an opportunity for participants to experience how Korea is using ICTs in educational planning, implementation, management, and practice. For this, participants visited Korea Education & Research Information Service (KERIS), Ministry of Education and HRD (MOE&HRD), Seoul Shinhak Elementary School, Incheon Buwon Middle School, and Incheon Metropolitan Office of Education.

Through the visit to KERIS and MOE&HRD, participants were able to get insight into educational planning and management procedures at a national level in terms of using ICTs. In addition, the future challenges of using ICT in education, effectively and successfully, were discussed.

During the visits to the schools, it was observed how teachers are using ICT in teaching and school administrative operations. Also, participants had an opportunity to observe U-learning class and looked around school facilities regarding ICT and digitalization in education.

Moreover, the use of ICT in education planning and management at the local office level was introduced in the visit to the Incheon Metropolitan Office of Education. The role of offices of education in the areas of collecting and managing educational statistics and main educational statistics, used for policy implementation, were introduced.

#### **1. Korean Education and Research Information Service (KERIS)**

Since its establishment in 1999, KERIS has contributed to educational development in order to be a global partner in the use of ICTs in education. During the visit to KERIS on July 10, 2007, major functions and tasks, including some important achievements and projects of KERIS, were introduced by Dr. Myung-sook Pang, Director of E-learning International Cooperation Team at KERIS.

One of its major functions is to support MOE&HRD in establishing master plans and allocating budgets. Also, it supports 16 Metropolitan & Provincial Offices of Education in implementing strategic plans and allocating local budgets.

The major tasks of KERIS are supporting policy-making and their implementation, promoting e-learning for primary, secondary and higher education, facilitating e-administration such as the National Educational Information System (NIES), enhancing academic resource sharing, and expanding global cooperation. KERIS has been seeking to build global partnership for EFA by preparing for the New Millennium of learning, reducing the digital divide to promote education for all, supporting teacher development, consulting on the use of ICT in education, establishing partnerships with 13 countries and 12 institutions, hosting international expo and conferences, and meetings with 420 overseas experts in 2006.

The Digital Library System (DLS) and Quality Assurance Service were also introduced. DLS was established in 2006 in order to encourage the utilization of school libraries. It supports the operation of a comprehensive digital library which contains books, non-book materials, and on-line information. For this, KERIS maintains and improves the DLS software. KERIS established a comprehensive quality assurance system and evaluates distance education & training institutes. As the e-learning is spreading across the world, the needs of quality assurance in e-learning systems are rising. Following this trend, KERIS has developed an evaluation standard in order to have a world class level of e-learning quality assurance.

Participants also visited the Ubiquitous Classroom, opened on June 29th, 2007. It was designed to have visitors experience a future classroom and utilize its facilities for future education research. It also promotes research on new teaching-learning models and the verification of future educational equipment compatibility. The participants were very impressed with the U-Class, experiencing first-hand each piece of digitalized equipment.

## **2. Ministry of Education and Human Resources Development (MOE&HRD)**

After visiting KERIS, the participants visited MOE&HRD. The integrated digital system for local education administration and finance was briefly explained by Mr. Seung Gwon Yoo, Deputy Director of Digital Local Education Budget & Accounting Reinvention Team.

The digital system's goal is to have 60% of all administrative and financial work (80% of budget & accounting) processed through a digital system by 2010. In other words, three parts, the work manual, budget/accounting, and customized statistics may be processed through the one-stop digital system, enhancing the effectiveness of the work as a whole. First, the work manual can be a stored record of work such as performance/ knowledge management. The

budget/accounting can be a performance-based budget, one-stop double entry bookkeeping. Also, customized statistics may reduce statistical work at schools by improving the credibility of the statistics.

The presentation was concluded with an explanation of the four stages of the implementation plan. Having started with an analysis of local educational work and the design of an education digitalization plan since 2005, it will be fully implemented at the ministry and local education offices and schools, run by control/service teams, and distributed to the public by 2008.

The question regarding the relation between budget cutting, which is a result of the digitalized education system, and the reduced worker effect was raised. The presenter explained that budget cutting includes a reduction in human resource budgets. The workers may not be dismissed but instead, re-positioned to another division in order to carry out the work more effectively.

Also, questions were raised on the challenges that might arise in the process of the project. The presenter said it would be developing a successful NEIS as well as improving the working method to innovate local education.

### **3. Seoul Sinhak Elementary School**

On July 11, 2007, the participants visited Seoul Sinhak Elementary School. The school has been designated as a research school for U-Learning by MOE&HRD from 2005 to Feb. 2008. U-Learning is short for Ubiquitous Learning, *ubiquitous* meaning *everywhere, omnipresent, pervasive*.

Seoul Sinhak Elementary School envisions their educational environment blooming with dreams and love, in preparation for the future. There are about 1,200 pupils divided into 37 classes, with 46 teachers in total.

The school provides a variety of educational programs in addition to the regular curriculum. The school puts much emphasis on archery activities in particular, and as a result, bearing ample fruit by winning various nationwide archery competitions. Seoul Sinhak Elementary School was nominated as an athletic practice school in the field of archery in 2001. As a result, a fully furnished, air-conditioned and heated training center was opened and young archers made more effort to achieve better records. The participants looked around the archery training center and observed student archery activities.

Seoul Sinhak Elementary School has strengthened cyber education. The school provides education through the utilization of the school's homepage and its cyber-school server. In this aspect, the school encourages pupils to acquire various ICT related certificates during their school years. In addition, various

competitions are held to assess the capability of their cyber utilization and computer application.

Sinhak's computer education focuses on developing abilities that help students manage redundant information and share key information with others for their benefit, especially in learning. Therefore, all Sinhak students take computer class once a week no matter what grade they are in. There are 2 computer rooms in this school. The 1<sup>st</sup> room on the 3<sup>rd</sup> floor is for 1<sup>st</sup>, 2<sup>nd</sup>, 5<sup>th</sup> grade students. 3<sup>rd</sup>, 4<sup>th</sup>, 6<sup>th</sup> grade students use the 2<sup>nd</sup> room on the 4<sup>th</sup> floor. Students learn how to use Windows functions and Word processing programs in Korean and English in order to become accustomed to computer usage. They can also take advantage of obtaining learning materials from internet usage education. Many materials and links are easily accessible on Sinhak's homepage, at <http://www.seoulsinhak.es.kr>.

Since Seoul Sinhak Elementary School was designated as a research school in the area of u-learning in March 2005, the school aims to explore the effectiveness of u-computing technology application in elementary school learning. This research program is carried out under the title "AA System of Tablet PC." To conduct this project, u-learning environments for the pupils were set up. First, the school constructed u-learning hardware like Tablet PCs, electronic boards, individual headsets, and digital cameras. Each student in the u-learning class are given their own Tablet PC, so they can use them at home as well as in the classroom while studying. Moreover, many kinds of software have been installed. Using One Note 2000, students can write on the computer screen with electronic pens and record their voices. As key software in u-learning, the internet portal server plays important role. In summary, the facilities for the u-learning have been installed as follows:

- Wireless internet set up at the school (30APs) and at the homes of pupils (31APs)
- 50 Tablet PCs (32 for pupils, 18 for teachers)
- Electronic multi-board attachable to PDA TV.
- 32 headsets, 15 DVD players, 9 digital cameras, etc.
- The research program has been applied to the 5<sup>th</sup> grader by utilizing digital textbooks.

Now, most students actively upload their opinions on the school homepage. In addition, many different kinds of lectures are available at the Cyberschool on Sinhak's homepage. Also, the Ministry of Education and Human Resources Development has developed a digital textbook, and the u-learning class has been utilizing it in the main class since 2006.

The effects of the U-learning research program are as follows:

- Setting up u-learning infrastructures



- Positive change in the learning attitudes and achievements of the participating pupils
- High satisfaction of parents
- Successful public relations through frequent media coverage and class inspection of local and foreign institutions.
- Developing teaching methods.

#### **4. Incheon Buwon Middle School**

In the afternoon of July 11, 2007, the participants moved to Incheon Buwon Middle School. The Incheon Buwon Middle School was established in 1991, and now contains 1,539 students divided into 37 classes. There are also 61 teachers and 10 administrators. 13 classrooms are equipped with LCD Projectors and VCRs. The remaining classrooms are all equipped with 43 inch Projection TVs, VCRs, and OHPs. A 10Mbps dedicated internet line has been installed and every school in Incheon is connected to the Incheon Office of Education.

After a meeting with Mr. Jae-Hwan Lee, principal of the school, participants observed a U-learning technology class. The class was led by Mr. Jaekyeon Oh, a teacher from Buwon Middle School. The class contained 3<sup>rd</sup> grade middle school students (in a K-12 grade system, 3<sup>rd</sup> grade in middle school means 9<sup>th</sup> grade.) Using u-learning technology, the students presented on 'Future Direction 2030 Project'.

After the class observation, Mr. Jaekyeon Oh made a presentation on the use of educational administration information system at the school level. Mr. Oh explained how teachers are using NEIS in schools. In the beginning, key concepts of U-learning, such as anytime access to the network, smart instruments, and personalized learning were explained. Finally, specific details on NEIS were presented.

The purpose of NEIS is to interconnect nearly 10,000 elementary and middle high schools, 16 cities, provincial education government offices, and affiliated agencies and MOE&HRD, via the internet. Furthermore, it aims to increase the efficiency of overall educational administration, improve the working environment of teachers, and promote better communication among parents, teachers, and students.

NEIS at the school level includes school information, curriculum, school registration (student registration, student transfer, enrolled students, and etc.), student life, records, cumulative records, preservation of graduate data, and parent service. For parent services, NEIS covers student information such as attendance, record, cumulative records, health records, and other school

information such as history, curriculum, annual schedules, and monthly schedules.

## **5. Incheon Metropolitan Office of Education**

Mr. Dong-ho Kim, a school inspector from Information & Vocational Education Division, Incheon Metropolitan Office of Education, made a presentation on the current situation of the Incheon Metropolitan Office of Education and the application of educational statistics.

The Incheon district includes 778 schools, 479,249 students, and 22,201 teachers. Also, Incheon Metropolitan Office of Education is operating 5 local education offices and 6 education-assistance institutions, including educational training centers, education & science research centers, 8 libraries and 7 gymnasiums.

When establishing educational policies, educational statistics are used. Policy makers at the local level use the Education Policy Monitoring System (EPMS). This system produces questionnaires, sends email and then collects, analyzes and reports the results, along with taking statistics. Based on the analyzed documents, they make a policy for each case.

A customized statistics system using NEIS was also introduced as an example of applying educational statistics using ICT in policy making,. The customized statistics system transforms NEIS documents into various personalized statistic materials. The system is also used as a basis for establishing important policies such as student enrollment, new school buildings, calculation of subsidies, and teacher estimation, among others.

The NEIS system can enhance the efficiency of comprehensive educational administration. It can also improve working environments for teachers. NEIS consists of 28 areas. These include budget, accounting, school and education-assistance institution materials. At the school level, NEIS takes fundamental statistics of each school, creates educational and administrative statistic documents, supports documents necessary for national and administrative inspection, and uses them for budget analyses. Also, at the city offices of education level, NEIS secures student enrollment plans, establishes budget and mid-term investment plans, estimates the numbers of teachers and newly-built schools, and guarantees information for policies and budgets. In addition, some examples of NEIS-made educational policies were introduced.

## **IV. Education Planning, Implementation and Management through the Use of ICTs**

The chapter IV introduces participating countries' national educational policies and strategies, principal issues facing education planning, management and use of ICTs. Armenia, Uzbekistan, Georgia, Mongolia, and Kenya participated in the Study Visit Programme. The participating countries' national reports include information on their educational systems and structures. They also deal with the use of ICT in education sectors, such as the objectives and strategies in applying ICT in education and the use of ICT in education planning and management. In addition, the national reports explain the current status of EMIS, and analyze data collectors and users in the education sector.

These national cases were synthesized and analyzed in the paper, *“Third Millennium Challenges Facing Six Countries on Educational Planning and Management through the Use of ICTs”* by Pireangelo Alejo. He mentions that we are the ones who control and create the information age. The fundamental fact that the creation of knowledge now depends on educational utilization of ICT, improving educational processes, practices, management; leadership in learning is needed. However, very few people have capability to use or understand ICT. A lack of accurate data and inappropriate usage of ICT are problems that arise in creating a knowledge-based society. Furthermore, there are also problems in introducing systems that serve useful purposes but are scarce in less developed countries. In each effort to improve education planning and management through the use of ICT, he emphasizes that we must capitalize on 3 things: new learning, re-learning, and un-learning.

Finally, in this chapter, the discussion that took place during the study visit will be summarized.

### **1. Armenia<sup>9</sup>**

#### **A. Introduction**

The current education system has been established during the short existence of the first Republic in Armenia in (1918 –1920). It experienced further developed during the years of Soviet Power (1920 – 1990). In 1991 the education system

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<sup>9</sup> This paper was presented by Robert Stepanyan, Head of Development Program's Department, Ministry of Education and Science RA and Arshak Harutyunyan, Deputy Head of Department of International Cooperation and Diaspora, Ministry of Education and Science RA at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

of the Republic of Armenia stepped into a new stage of hard changes in transition period. The economic crisis that followed the declaration of independence in Armenia had a drastic impact on education especially during the first years. Those years can be described as a period of system survival and soviet education achievement maintenance. Parallel to the country economic development in 1996-1997 started the education network reform. Before 2003 the reform was basically of structural nature and tended to solve the finance and management issues within the network. The new stage in reform started since 2003, when education content issues were also included, like the curriculum, new syllabuses, new assessment system of the learners academic outcome, etc.

At the current stage of reform the most important issue at the government and national level is the maintenance of education network and its development, as well as its compatibility on the international level. The evidence of all this is the laws adopted and decrees issued after the declaration of independence.

## **B. Structure of the Education System**

The education system of Armenia is an integrity of education institutions and regular enterprises which consists of preschool education for children from 3 to 6 general secondary education comprising primary, basic and high school, middle professional and higher education, post-graduate education, specialist qualification and qualification improvement institutions. The graduates of basic and high school have the right to continue their education in primary and middle professional and higher education institutions respectively.

Non-state sector education system also operates in the republic including schools, colleges, higher education institutions, etc., which, along with ensuring the market of education service provision, have an essential contribution in education network development.

### **1) Preschool education**

The government prescribes to the family the main role in preschool education, and takes up the obligation to ensure adequate conditions in the family for providing child comprehensive development and care. The state establishes preschool institutions: day care (for 2 – 3 years old children); kindergartens (for 3 - 6 years old children); or the combination of the two above.

667 community-based and 8 ministerial preschools currently function in the preschool education sector. The enrolment in both categories counts 44849 children.

The first preschools in the non-state sector started in 1999. There were 17 such institutions in 2005 and all in Yerevan. In 2003 there were 714 children in

private preschools, 36 groups, 1,351 places; average number of children in a group was 20, actual engagement of places was 52.8 %. Average attendance per institution was 42 children.

The number of preschool institutions is reduced by 50% as compared to 1991 (there were 1,283 institutions). The enrollment is also considerably reduced. In 1991, the number of children attending preschool was 143,900. In 2005 it was only 45,470. This means that the enrollment is reduced by 68 %. In 2005 only 19.8 % of the 1-5 years old children were in preschool institutions in the Republic. The preschool enrollment in urban areas is 3, 5 times more than in the rural areas.

Child attendance have stabilized since 2001, it is averagely 45,000 children per annum. Also the reduction of the number of preschools has stopped. At the current stage we persistently need preschool system development projects and need to put them into urgent implementation.

## **2) General education**

In the framework of the new curriculum it is envisaged to implement 12-year secondary general education (starting from 2006) in a triple level school system, the level sequence is the following:

- primary school - 4 years (grades 1-4)
- basic school- 5 years (grades 5-9),
- high school - 3 years (grades 10-12)

1,332 state owned secondary general schools operate in the Republic currently, among which 12 are primary schools, 151 are basic and 1,169 are secondary schools. Respectable from the location, or the number of students (classrooms) the vast majority of the schools are secondary schools, which comes to prove that the policy of maintaining sole primary, or sole basic or high schools is not practiced in Armenia presently. There are also 34 colleges and 16 vocational schools.

477,301 students study in the general schools. The number of students has decreased by 18.2 % as compared to that of 1991 (583,797 students). The number of school-age children still goes down because of birth rate abrupt reduction and on-going migration

Enrolment rate indicator in the republic for the 7-9 year old children in primary school is 93.6 %, in basic school it is 98%, in high school 85.6 % : Enrolment general indicator for the republic general schools is 92.7 %.

42,669 teachers work in the schools of the republic. The number of teaching staff has also decreased as compared to the previous years. As compared to the

last school year the number of the students is reduced by 3% and the number of teachers by 2%.

The number of teachers having higher pedagogical education is only 67.5 % of the total number of teachers, 12 % have higher but not specialized education, 11.5 % are graduates of pedagogical colleges, 4.5 % are graduates of non-pedagogical colleges, and finally the 1.8 % of the teachers have non-complete higher education.

Along with the state schools there are also 41 non-state schools in the republic and the total number of enrolled students is 6,541. The number of teachers in those schools is 998 .There is no budget allocation for the non-state education institutions.

### **3) Special education**

There are 54 state special boarding schools, of which 41 are for children having mental or physical development problems, 5 are for children deprived of family care or for children from socially vulnerable families; and 8 are for assisting the education of gifted or capable children.

The total number of children enrolled in the boarding institutions is 10,585 and 52% of them take full board.

More efforts are made in the recent years to educate children with physical and mental disabilities in general schools, and to integrate them fully in the society.

The Board of the Ministry of Education and Science issued a decree approving the “Reform Programme of RA Education System Boarding Institutions” dated June 13, 2003. According to the above document the special education system reforms should take the following directions:

- institutional adjustment of the boarding institution network,
- improvement of admission system of the boarding institutions,
- decentralization of the services provided within the boarding institutions,
- introduction of new management and financing system in the boarding institutions,
- child care and education quality improvement in the boarding institutions,

The mentioned aspects are interrelated and complimentary. Efficient implementation of these aspects is possible only by gradual and complex implementation of required activities.

#### **4) Preliminary professional (or vocational) education**

Since 2004 primary professional education is implemented in 26 vocational schools and 12 colleges. The network current enrolment is 2,700 students. The duration of the primary professional education depends on the applicants educational background and also the choice of profession. It can vary from 1 to 3 years provided the preliminary education is basic general or complete secondary general education.

Since 1991 the primary professional education network has undergone considerable changes in terms of specializations as well, which is closely linked with the economic changes in the country. The professions related to the spheres of services, trade, and food industry is now weighted in the list of professions, while the number of students in the industry or construction sector has drastically decreased. There are no non-state sector technical colleges in the Republic of Armenia.

#### **5) Middle level professional (or vocational) education**

Middle professional education is performed in middle professional education institutions (MPEI) college and vocational schools. Education in the middle professional education institutions is implemented based on the applicant's preliminary education whether general basic or complete secondary in both ways – stationary and distant education. The duration of education depends on the level of the student's preliminary education and choice of profession, and it may last from 1 year and 10 months to 4 years and 10 months. 100 professional qualifications are provided in humanities, pedagogy, health, economy, arts, technique, and technological directions. The graduates are granted the qualification of junior specialist.

85 state middle professional education institutions function currently where 29,500 students study, and 23 private institutions with 1,800 students. The number of state middle professional education institutions (68 institutions) has increased by 20% and the number of students (40,600 students) has reduced by 27.3 % as compared with the level in 1991.

A new list of professions is approved includes 257 professions grouped in 28 professional groups as an outcome result of the reforms in middle professional education.

#### **6) Higher and post-graduate education**

Higher education in the Republic of Armenia is performed in two degrees - there are programmes for Bachelor and Master degree both in state and private

education institutions, stationary and distant education forms, for paid and non-paid students. At post graduate courses there are masters and doctors' courses. Currently 16 state and 72 non-state universities operate in Armenia, also the Russian – Armenian Slavonic University created on the basis of agreement signed between the two states, and two other universities where the state is involved: the French University and Regional Academy of European Education. Out of 72 private universities 28 are licensed and 7 have licensed specialties. 66,799 students study in the state universities, out of which 13,000 get distant education as of January 1, 2006, and 25,214 students study in private universities. As compared with 1991 the number of state universities (14) has increased by 5.33 % of the students in the state universities study in free section. While in 1991 only 3% of the students paid for education, presently the paid students form 67%.

In 2003 RA Government has approved of the “Strategy Paper for Higher Education Development”, which envisaged the following directions in higher education reform:

- to ensure the growth of inside and outside efficiency of the higher education network
- to improve the links with the labor market
- to ensure the availability of higher education for all the social layers in the society
- to reform of the higher education system
- to reform the state funding system
- integration of the higher education system into the European Higher Education Area inclusion in the Bologna process.

Presently Armenia is taking respective steps towards integration into the currently shaping up European Higher Education Area (EHEA).

### **Major issues and challenges confronting educational reform**

The main challenges of the field of education is providing of quality of education according to the international standards. The main issues of the education are following:

- Discrepancy of the program to market economy and requirements of the democratic public,
- Education is more directed to granting of the academic knowledge, rather than formation of skills,
- Limited use of modern methods of teaching and estimation including ICT,
- Unproductiveness of the system.



### **C. Reforms in Education Sector**

The evolving reform process in the General Education area could be conventionally divided into two stages:

- First stage including the years from 1998 to 2002.
- And the second stage that has started since 2002.

In the first stage the reform had general education management decentralization and orientation and institution autonomy increasing direction involving the introduction of new mechanism for general education finance and management, revision of the organizational and legal status of the general education institutions, improving the management qualities of the education administration. The current situation is that all the schools in the republic have transferred to the new management system and are managed through the school board and are financed through per capita lump sum funding.

Also the general education content revision activities were initiated in this stage. Particularly the syllabuses were revised, they were corresponded to the social requirements.

The basic goals of current education reform are:

- To increase the quality of general education
- To ensure the compatibility of the Armenian education system to the current requirements of the society and economy and internationally accepted education standards
- To develop the Armenian education system towards the needs of “knowledge economy”.

One of the main directions of reforms is the Introduction of information communication technologies in the general education system to increase learners academic progress and improve teaching quality through ICT application and contribute to the elimination of time and space limitations in teaching process by such.

The objectives are:

- To increase computer literacy of the learners and teachers which serves as basis for the large scale application for new technologies
- To fundamentally reform the teaching process of the subject area informatics at school.
- To equipment of the general education schools with ICT as a precondition for its development
- To ensure ICT applications as part of teaching and learning in mandatory subjects.

### ***The whole picture of the use of ICT in Armenia's education sector***

The government has proclaimed the ICT as a priorities field. However in the field of education the using of ICT is on a low level. Only 30% of educational institutions are equipped by modern computers and their smaller part have also Internet connection. The majority of teachers have no sufficient skills for ICT using in teaching process. The present program of reforming is directed on overcoming of these issues.

### ***Strategies or plans (mid-term and long-term) adopted in the use of ICT in education planning and management and Key issues and/or obstacles to strengthen using of ICT in education planning and management***

As I have noted in the national report, in 2002 in an education system have been introduced EMIS system, which enables to analyze and give to the stakeholders the basic data of education.

The basic directions for the further development of EMIS are following:

- In parallel introduction of computers in schools and maintenance with the Internet gradually to pass to data collection on-line,
- In system to include also statistical data of other educational levels. In present the form of report and methodology of preschool education is developed. Now we search for source for development of the software,
- The project is developed within the framework of the WB credit program and till now is carried out by PIU. In this year transfer of system operation to the staff of ministry is provided. For this purpose training of appropriate specialists is provided

### **D. Education Management Information System (EMIS)**

There was no any statistic data and report collection and analysis system in Armenian general education before 1999. Information about the education institutions was being collected by the form ways, which means visiting the sight, having telephone calls, etc., that do not meet the current need for data collection.

“Education Management Information System” (EMIS) has been introduced in 1999 in the framework of “Education Management and Finance Reform” project for resolving the above issues, as well as to ensure complete data collection, processing and analysis in an optimal way, both on regional and National levels.

EMIS is an organized group of information and documentation services that collects, stores, processes, analyses and disseminates adequate information for

educational planning and management. The goals and objective of education management information system are:

- improve data collection, maintenance, analysis, commenting and disseminating process for the purpose of supplying the education network decision makers with needed information;
- make information available in all management levels for doing efficient planning and management;
- collect target information by reducing the collection, of unnecessary data to minimum;
- ensure information availability and transparency of education network data;
- make decisions based on information and its analysis.

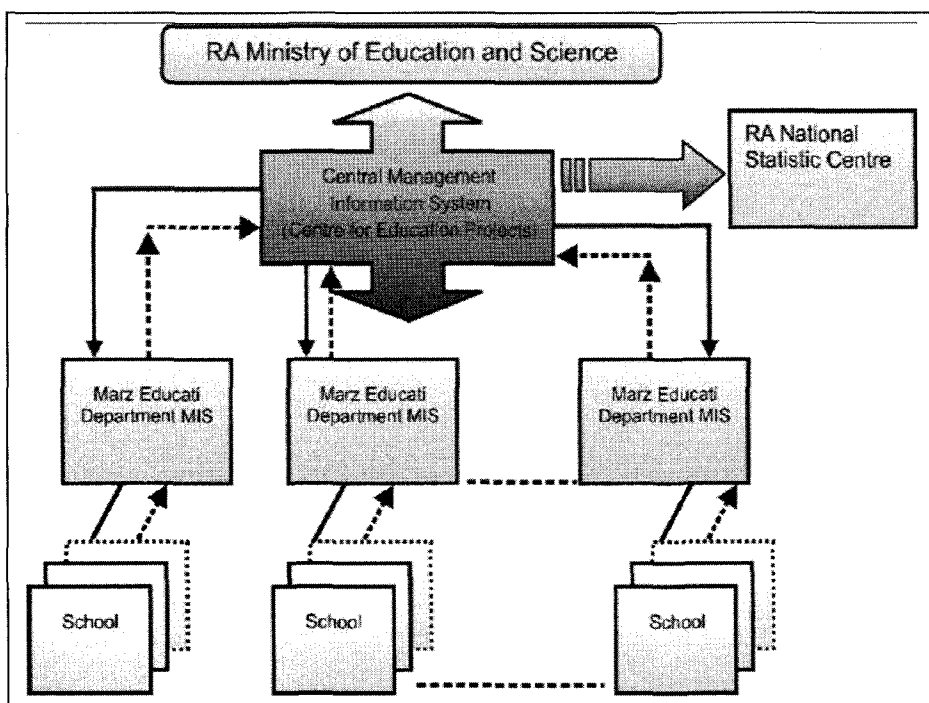
### **Information Flow**

Generally the information flow has a definite direction: school - provincial (marz) education department - MIS center and vice versa. Information flow is given in the diagram below.

The trustworthiness, high quality of integrity is ensured first of all at school level. After the information is collected at school level it is processed, developed and finalized in the further management levels of general education – provincial education department, and Ministry of Education and Science. Information collection and development at the mentioned management levels generally over goes through three stages the initial data are collected at the first stage. The schools fill in the “General Education Institution operation” report forms reflecting the given year. Those forms are collected and entered by the provincial department into specially developed software.

At the second stage the initial data is summed up, checked up and grouped aiming to produce the indicators that are required for records, distribution, planning and general management.

Data analysis, generalization and conclusion drawing required for decision making is performed at the third stage.



**[Figure IV-1] Information flow**

Every year MOES and National Statistic Service are approving the data collection questionnaire “On General Education Institution Activities”, which includes complete information about general education institution activities and consists of 9 sections:

**A - “Visit card”**

School status, type, (primary, secondary, special character, etc.) working timetable, type of ownership, administrative belonging and address;

**B – “Top management”**

Names, date of birth, education, and experience of the school director, deputy director, organizer, accountant and the school board chairperson;

**C – School building and facilities**

Type of the building, physical shape of the building, communication /sewage system, conditions of activity, the number of classes busy at the same time by shifts, available school furniture, teaching materials and utilization;

**D – Number of subject hours by school curriculum:**

Number of hours by subjects and by grades;

**E – Teachers:**

Number of teachers by gender, specialized or non-specialized education, teacher employment level by distributed hours, teacher flows, vacancies by subject type and teaching load, teacher that have attended refreshment courses and have qualification.

**F – Students:**

Student number by gender, age, by teaching language and grades; distribution of student numbers by shift by out of school studies; school drop outs by age and by drop out reason; student absentees by subject; participation in school Olympiads by levels; examination results by education levels and by graduating grades; graduates; student flows by grades;

**H – Non-teaching staff.**

Numbers of the administrative and technical staff, service provider for technical studies, laboratory workers, librarians, doctors by gender;

**I – Library:**

Library stocks at the beginning of the year and at the end of the school year, Number of readers, librarians, reading places;

**J – Funds received and spent.**

Available national budget and out of budget funds, financial expenditure from the budget allocations and out of budget funds.

Currently EMIS includes a comprehensive data on 2000-2001, 2001-2002, 2002-2003, 2003-2004, 2004-2005, 2005-2006 and 2006-2007 school years.

**Data Sharing**

Each year statistical school data are generalised and published in yearbook “Education in Armenia, which is distributed to stakeholders. It also provides to locate the data on the internet web-site of the ministry.

**Change of the Data Collection Forms**

Report forms of the schools were several times revised, for the decision of existing problems. The list of data is presented in the National Report.

**The Person Who is in Charge of Filling Out Data Forms at School Level:**  
Director of the school

**Training Program for Data Collection**

.Need the data collectors training were not. Have been organized the training course for computer using, which carried out by the organization who developed the projecxt.

Main Demanders or Users of the Education Data: Ministry of Education and Science

Data Processing and Mnagement

EMIS system allows to get information both about separated schools and generated schools.

School Data Reports

Information of the separate schools does not introduce, but this is not connected with somerestrictions. There is technical problem.

※ The Ministry of Education is developed “National Programme for Education Development 2008-2015”. During that have been used the model developed by UNESCO. In the base of the model were the data of EMIS.

※ Now the extension of the EMIS is provided including preschool education. In this process we collaborate with UNICEF. There was advisable if UNESCO is also support for project development process.

[Table IV-1] Analysis of Data Collectors and Users

Level of Government Function	MoE Department of School Management		MoE Department Personnel		MoE Department of Monitoring		Ministry of Finance		Ministry of Statistics		Local Government		School	
	C	U	C	U	C	U	C	U	C	U	C	U	C	U
Produced /Used														
Personnel schools (Teachers, non-teaching)	X	X			X			X		X	X		X	
Asset, infrastructure , Facilities		X		X	X	X				X	X	X	X	
Pupils (Enrolments, attendance)	X	X				X		X		X	X	X	X	
Pupils performance		X											X	
Demographic (population)		X							X					
Geographic (school location)				X									X	
Textbook		X		X							X	X	X	

C=Collectors (producers, source, compiling), U= Users (recipients, analyzing)

## 2. Georgia<sup>10</sup>

Education is currently considered one of the biggest priorities for the country. Radical structural reforms have been implemented at all levels of education aimed at increasing the quality of education for all. The share of public expenditure on education in GDP has increased from 2 percent in 2003 to current level of 3.4 and is projected to increase further. The MoES is currently the third biggest spending ministry in the country.

<sup>10</sup> This paper was presented by Otar Soselia , Head, EMIS, Ministry of Education and Science and Berika Shukakidze, Head, Analytical Dept., Ministry of Education and Science at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

Education can play an important role in improving the competitiveness of the economy, currently dependent on low-income agriculture and unsustainable exports such as scrap metal and aircraft repair services. The IMF finds that, while Georgia still ranks lowest among the countries in the region in the 2005-6 Global Competitiveness Report (World Economic Forum 2005), there is evidence of improvement in a range of indicators of business conditions and competitiveness since 2003, thanks to the drive against corruption. It recommends continued structural reforms, as well as prudent macroeconomic and flexible exchange rate policies (IMF 2006). More dynamically and for the longer run, these will be supplemented by improvements in the quantity and quality of education, which could transform the factor endowment of the economy, shifting its comparative advantage away from products and services based on natural resources and cheap, relatively unskilled labor towards skill-based products and services. International evidence, including cross-country regressions and many country case-studies, is consistent with this hypothesis, which implies an active role for education in changing economic prospects.

The **main goal** of the development of educational system is the creation of knowledge-based society and economy through providing to each citizen the opportunity of full realization of his/her potential regardless of age, ethnicity or social standing.

The following are the **strategies** to be pursued in order to achieve this goal:

- democratization of management processes and the active involvement of society into the process;
- decentralization of the system of management and guarantee of independence and autonomy to educational institutions;
- promotion of outcome-oriented management in the educational sector through the introduction of relevant quality management schemes and mechanisms for resource distribution;
- an increase in the amount of funding provided for the education sector and development of its material-technical basis;
- improvement of educational contents at every level in order to ensure positive learning and labor market outcomes;
- integration of education and science with international trends and development of educational and scientific centers in higher educational institutions.

The extensive and radical education reform program since the beginning of 2004 has been part of this strategy. State policy on education during the reforms has been aimed at improving governance and funding mechanisms for education, granting autonomy to educational institutions, deregulation/decentralization of the system, improving learning and labor market outcomes of educational programs.



The ultimate goal of the reform is to establish a system which will ensure the provision of highly qualified, self-reliant and internationally competitive human resources leading the country to poverty reduction, social welfare and economic growth. Thus the education reforms in Georgia are based on the globally acknowledged principles of a knowledge-based society and economy.

More specifically, a number of **action lines have been identified in the course of educational restructuring**. These action-lines are as follows:

- increase and diversify sources of income and financing;
- provide an appropriate regulatory framework;
- eradicate corruption;
- intensify international cooperation;
- involve all the major stakeholders in education planning and management;
- assure the sustainability of the system by providing life-long and life-wide learning opportunities;
- maintain high-quality education, training and research by means of academic freedom, institutional autonomy and peer review.

The conceptual, legislative and structural basis for the system has been established. Currently the following are identified as medium-term outcomes expected through the realization of the sector action plan:

***Sustainability*** – Since the institutional foundations of the process are already in place, the introduction of relevant legal mechanisms for transparency and accountability, as a next step, can ensure the sustainability of the system. This in its turn will provide for compatibility and comparability of Georgian education with international educational systems.

***Social inclusion*** – The implementation of various programs and projects will maximize the inclusion of the citizens of Georgia in education. This, on the one hand, will reduce social injustice due to unequal opportunities and, on the other, will provide essential resources for further development of the system.

***Competitiveness*** – In order to ensure high quality of education competitiveness shall be encouraged at three levels: individual, institutional and national. The system of education will be involved in the European system on an equal basis with other countries and with enough capacity to compete with them.

**The structure of education system in Georgia is the following:**

- Pre-school Education
- General Education:
  - Primary education (grades 1 to 6)
  - Basic, or lower secondary education (grades 7 to 9)
  - Upper secondary (grades 10 to 12)

- Vocational education consisting of 1) Initial Vocational Training and Higher Professional Education
- Higher education consisting of three levels: undergraduate, graduate and postgraduate studies.

The scope and pace of Georgian education reform since 2003 are unique in the region. In particular, reforms of **financing and governance** of educational institutions, that other countries have been grappling with for years, have been initiated at a stroke. They introduce the *per capita* financing principle of ‘money follows the student’ in both general and higher education. The state undertakes to provide twelve years of free **general education**<sup>11</sup>, and primary, basic and general schools (which have been converted from local-government budget organizations to autonomous Legal Entities of Public Law or LEPLs) are funded directly from the Ministry of Education and Science, receiving an amount per pupil (a voucher) which varies only according to the location of the school (highest for those in highlands, lowest for those in cities) and covers current but not capital expenditures. Small schools can receive an extra amount per pupil from the central budget, and extra educational and teaching services and special educational curricula can be financed locally. Each school has a Board of Trustees, composed of elected teachers and parents, a student representative and in some cases a local-government nominee, which elects the school director, approves the budget, and oversees and advises school management. The lump-sum amount received from the MoES (paid into the school’s own bank account) can be spent in any way that school management, approved by the Board, decides, subject only to a minimum salary rate for teachers, depending on their qualifications, experience and the number of pupils per class. Local education departments have been replaced by **Education Resource Centers**, which facilitate (but do not control) schools’ educational activities by collecting data, conducting research, organizing training, workshops and seminars, etc..

Per student funding model has been applied to **higher education**<sup>12</sup> (HE). Within this model, upper limit of tuition fees is set for state universities, but not for private ones and this upper limit equals the highest amount of grant issued by the state. Uniform grants to a relatively small number of students (2005) have been replaced by grants on a sliding scale to a larger number, but still merit-based (2006)<sup>13</sup>; and a student loan scheme has been initiated in cooperation with commercial banks (2006). In line with Georgia’s admission to the Bologna process, a three-cycle degree system has been adopted. The HE management system has been changed making HEIs autonomous bodies and their heads are

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<sup>11</sup> See the Law of Georgia on General Education, April 8, 2005, for the overall framework and Decree N 182 of the Government of Georgia, October 14, 2005, for details of the funding formula.

<sup>12</sup> See the Law of Georgia on Higher Education, December 21, 2004.

<sup>13</sup> Depending on their scores in the new unified entrance examinations (next paragraph).

no longer appointed by the President but elected by each institution's Academic Council (the highest representative body consisting of elected professors from each department).

A crucial contribution to reduction in corruption and reform of higher education admission has been made by the introduction of unified entrance examinations, held in 2005 and 2006<sup>14</sup>, using sophisticated testing methods across a range of subjects. These are administered by a new agency, the **National Examination Center**, under the governance of but at arm's length from the MoES. On both occasions the conduct of the examinations was monitored by Transparency International. In its report on the 2006 examinations, together with the American Councils for International Education, the testing process was judged to be well organized and transparent. Wide support for the new system was found throughout the country, and a large majority of test takers, parents and administrators felt confident that it would help to eliminate corruption in university admission (Transparency International 2006)<sup>15</sup>. Together with university admission examinations the Agency is administering other examinations, as teacher certification, international student examinations, etc.

Similar management model has been established and relevant agencies have been set up in other areas important to quality assurance and control. The **National Education Accreditation Center**, established in March 2006 is responsible for carrying out the accreditation of higher education institutions. The number of authorized HEIs has already been reduced through a courageous two-step institutional accreditation process from 227 in 2004 to current 43. The Center intends to extend accreditation to general and vocational schools, and is developing criteria for this purpose as well as encouraging a process of self-evaluation. The **National Curriculum and Assessment Center**, established in April 2006, has introduced new curricula, designed to encourage active learning rather than mechanical transfer of knowledge, at first in grades 1, 7 and 10, and on a pilot basis in grades 2, 8 and 11. Authors have developed new **textbooks** in response to the new curricula: a textbook rental scheme has been piloted but not implemented nationally. The **Teachers' Professional Development Center**, established in July 2006, aims to develop standards and qualification requirements for teachers, to conduct a process of accreditation of teacher training and retraining programs and to introduce a system of teacher certification<sup>16</sup>. After many years of attention to in-service training, reform of pre-career training is regarded as the greater challenge.

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<sup>14</sup> For detailed discussion, see National Assessment and Examinations Center (2006: chapter 1).

<sup>15</sup> For a review of the 2005 unified examinations process, see Lomaia (2006).

<sup>16</sup> See Ministry of Education and Science (2006) for more detail.

**Georgian National Scientific Foundation** was established in July 2006 in order to support scientific and technological researches through the distribution of state grants on competitive basis.

The MoES is implementing state educational policy through the activities of the agencies described above as well as through various programs. These include physical rehabilitation of schools and ICT development, childcare and deinstitutionalization programs, civic integration and state and native language support programs, national contests for pupils.

Within the framework of school computerization **Deer Leap Program** it is planned that general schools in Georgia will be equipped with computers and will have internet access by 2008. Upon completion of the program student to computer ratio is expected to be 20/1 (it was 200 secondhand computers per student before the program started). Furthermore, ICT will be integrated into the national curriculum and used for teaching other subjects. By the end of 2007 all public schools in Georgia including highland villages will have internet access and educational internet network will be created by the end of 2007. The educational network was projected by Deer Leap and provider companies were selected on competitive basis encouraging them to advance and improve their services and thus contributing to the development of ICT infrastructure in the country. Training of teachers in ICT technologies is also part of the program. 70% of all teachers will have basic ICT skills by the end of 2008 and 10 % will be able to train others.

At the same time, major improvements have been made for physical rehabilitation of schools. For the first time during the last 20 years general schools were rehabilitated and new schools were built within the President's national program Iakob Gogebashvili for School Building Rehabilitation. The program will spend over GEL 390 million on restoration and repair work over the next four years.

Another area of innovation is **vocational education**. A recently adopted law on Vocational Education regulates initial vocational education: activities of the National Professional Agency, curricula and management of VETs. According to the Law the National Professional Agency will create national qualifications and accreditation system and vocational education standards will be developed by the National Curriculum and Assessment Center. In parallel the MoES has started the process of rehabilitation vocational training schools. 11 schools have been rehabilitated and opened in 2006-07. The MoES is planning to optimize the network of existing vocational schools and rehabilitate the best ones in the coming two years.

Professional higher education, reshaped to respond to labor market demands, will take place in HE institutions. It will be regulated by the Law of Georgia on Higher Education and integrated into HE area.

In some areas development of new approaches is still at a relatively early stage. In **early childhood care and education**, the need to address the issue of school readiness among 3-6 year olds is recognized, through development of regulatory policies (including flexible financial systems, operational protocols and professional standards), legal changes and national pre- and in-service teacher training curricula (Ministry of Education and Science 2006a).

Children Deinstitutionalization and Abandonment Prevention Program implemented jointly by the MoES, with donor support been aiming at the reduction of the number of children deprived of parental and family care in special institutions in order to help such children be better integrated in social life. The activities of the program include reorganization of childcare institutions, deinstitutionalization and creation of alternative family and parent support services.

For children with special educational needs<sup>17</sup>, a pilot project for the introduction of **inclusive education** in general schools is being mounted in ten schools in Tbilisi. This involves development of a national policy for inclusive education, preparation of training modules, adaptation of the physical, teaching and social environment of the selected schools, training of disabled children and their parents, introduction of inclusive teaching under the supervision of an elected coordinator, publication of a manual, establishment of libraries, increasing public awareness, and monitoring and evaluation (Ministry of Education and Science 2005a).

Policy is also addressing the particular educational problems of **ethnic/linguistic minorities** in the regions, the biggest of which is inability to speak the state language. A textbook on Georgian as a second language has been produced for non-Georgian schools in Samtskhe-Javakheti (Armenian) and Kvemo-Kartli (Azeri); incentives for qualified Georgian language teachers to work in minority schools have been provided under a short-term program while long-term goals are to be pursued through teacher training and human resource development programs.

In order to provide equal access to HE representatives of minority groups together with other citizens belonging to vulnerable groups are offered an opportunity to attend free preparatory courses for Unified National Admission

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<sup>17</sup> Defined by the MoES to include: children with disabilities and handicaps; members of ethnic minorities; street children; children with social problems; children with emotional disorders, speech and behavior problems; and girls who have problems of access to and retention in schools.

Examinations. Another benefit offered to such students is the provision of state social grants to cover tuition fees at universities.

The speed with which education reforms were initiated after 2003 owes much to the ground that had been laid since 2001 by the Education System Realignment and Strengthening Program, since renamed the **Ilia Chavchavadze** project, financed by a World Bank credit of \$26 million. The new financing formula and funding mechanisms, the outcome-based national curriculum for general schools, the national assessment and examinations system and the system for professional development of teachers were all tools developed by this project, ready for use when the political moment arrived. The project also financed improvements in textbooks (including the piloted but not yet implemented rental scheme) and the establishment of an EMIS. The second phase of the project continues the development of the curriculum, the assessment system and teachers' professional development, but devotes 45 per cent of its budget to improving the physical learning environment in schools.

Among other donor agencies, USAID, in its \$9.3 million 2005-2008 **General Education Decentralization and Accreditation (GEDA) project**, is helping: to build up the new system of regional management and educational support (the Education Resource Centers mentioned above); to develop and institutionalize a quality assurance and accreditation system for general, vocational and higher education; and to increase capacity within the MoES to manage the new systems. USAID has also provided technical assistance for establishment of the new initial vocational education centers. GTZ and the EU have been involved in assistance to vocational education, and the EU is financing changes in selected higher education institutions through its TEMPUS program (European Training Foundation 2005). In addition, the MoES actively seeks advice and support for smaller scale programs through bilateral donors and UN agencies and works closely with the NGO community.

Based on the analysis of needs, the EDPRP defined its strategic principles in poverty reduction. One of these principles was *formation of an information society*. The principle of formation of an information society implied the development of an open and transparent information environment through the wide-scale introduction of digital technologies. Some important preconditions for this process in the field of primary and secondary education are as follows:

- access to computers and the Internet in each school
- availability of educational software and services
- availability and quality of technical support
- ICT skills of teachers and students
- integration of ICT into curriculum.

According to the data from 2003/2004, the distribution of computers in schools is unequal in Georgia. Most of the computers (50% of the total) are placed in Tbilisi schools. In 2002/03, 900 second-hand computers (18% of the total) were purchased and distributed to schools in the city of Kutaisi and the Imereti region. About 7% of the computers are located in the Kvemo Kartli region. The remaining 25% of computers are distributed in the other 8 regions. This is just a rough estimate, as there are no reliable data about computers in schools.

Unfortunately, the majority of computers in Georgian schools are second-hand and outdated. There is also no reliable information available regarding their current condition. There is no technical expertise or resources for maintaining old computers in schools.

Internet connections are rare in schools, in most cases the speed is very low (33 kbps) and the cost is high – prices for low-level Internet services are sometimes up to 20 times higher than in the European Union. The GRENA nongovernmental organization (Georgian Research and Educational Network Association) is the main Internet service provider for schools. Their prices are 1,5-3 times lower than the prices of other commercial companies.

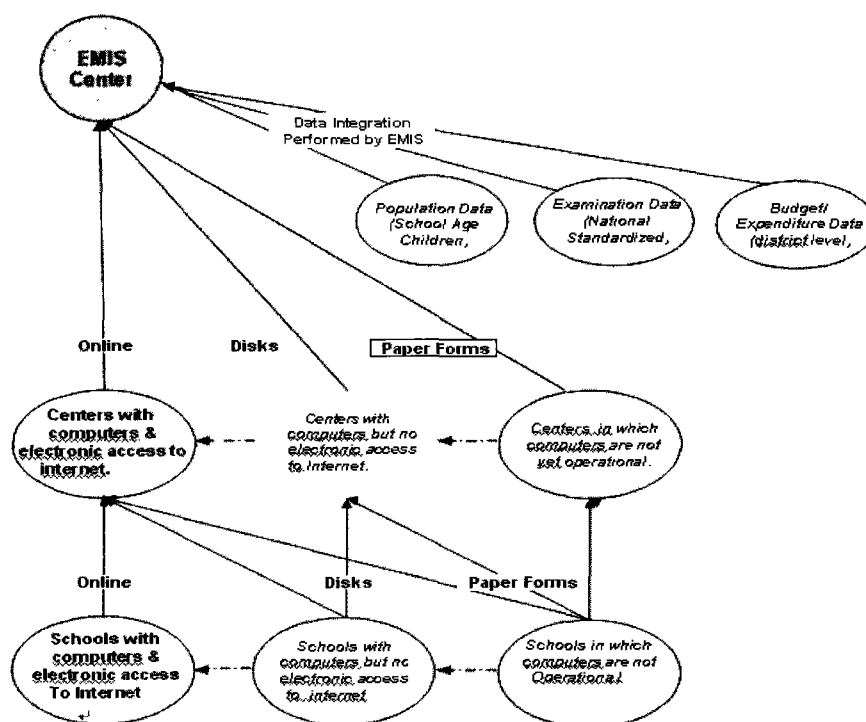
Unfortunately, GRENA's services are not available in all districts of Georgia. *Informatics is a compulsory subject in all secondary schools, but in most cases the content of this subject is programming – i.e. it can be taught and frequently is taught without computers. ICT is rarely used in other subjects and in school management. The ICT needs for the successful nationwide school computerization program in Georgia can be described as a hierarchy .*

- \*. access to modern and stable **ICT infrastructure** by all teachers and students
- \* multifunctional, licensed **software** tools and services for educational use (including Virtual Learning Environments and Content Management Systems)
- \* **ICT skills** of students and school staff
- \*. Integration of ICT into a **curriculum** that provides valid goals, content and methods for using ICT in school
- \*. **Management** of ICT innovation on the school, district and national levels.

The hierarchy of ICT needs depicted by the pyramid does not imply that the low-level needs (ICT infrastructure and software) should be completely satisfied before high-level needs can be addressed. The suggested approach is to deal with all levels at once, in a systemic, integrated and coordinated manner.

The “Annual School Census” – school data – are timely and reliably collected every year in October. Even though many factors such as schools “being remote” or “hard to reach” or just historical “habit of being late in submission”, these school forms are “turned around”. The time is more than enough for school data collection during the second month of academic year when all

teachers and students are fully “enrolled”. All schools —regardless of its location, size, type (public or private) or level (primary, basic, secondary and tertiary)— fill out the school data form or submit it on time. In early October, “Annual School Census” forms is distributed by the EMIS department to all education resource centers. Each center is responsible to redistribute to all the schools it supports. During the month of October, all schools fill out the school census forms and submit them back to the education resource centers. In the month of November, all EMIS cells in the education resource centers enter school census data to computers using pre-installed database application program. At the end of November, all completed and organized data forms are submitted from the education resource centers to the EMIS department in the MoES. The part of data are electronic version, but paper form is typed by EMIS data entries.



[Figure IV-2] Flow of School Census and Other Data Sources from School to EMIS Headquarter

#### *A Model for Data Collection, Integration and Service in the Ministry of Education of Georgia*

It is possible to collect the same data by different institutions of Ministry. When data have different sources they are compared, and in case of need they



are corrected. All statistical data (annual school census) of primary and secondary schools are compiled, organized, printed.

The statistic observation forms are distributed, collected and unified twice in a year. The key data is : The basic character of Educational institutions, (name of the educational institution, address, ID codification, props of bank and other information) character of education institution (basic language of teaching, the profile of institution, number of students) Data of class-complete set, teachers, administration and assistant staff, data of pupil by levels, data of pupil ethnic and social groups, pupil who had transitioned on other level, stopped the study, been left on next year, changed the institution. Data by pupils age, institutions material-technical base (description of property existed on institutions balance, it's condition, and value)

The responsible person is school's director or accountant. They signature filled out data collection forms and consent rightness of the filled form by schools stamp. All these forms are collected by The Educational District of the Ministry by the help of Resource centers and are passed to EMIS.

Special explanatory text-book is created to learn how to fill statistic forms every year. Employees of educational resource centers (ERC) have trainings by this explanatory. After that the employees of resource centers, organize same training for schools directors and accountants.

The basic consumer of education data is the structural unit of Ministry of Education and Science (The Analytical Department, department in financial resources, National Curriculum and Assessment Center, National Examination Center, National Education Accreditation Center, and etc.)

Education data is kept in united database, which is accessible for Ministry's and EMIS employees. But it doesn't means that the education data is covert. Applicants can receive it by official form. This is regulated by Georgian law of education.

*It is possible to get information from database, by arbitrary classification. As by groups and by separate education institutes. This database is flexible and includes huge information.*

We expect from UNESCO and other donors support and assistance for developing use of ICT in education sector, especially in education planning and management. We expect as well as counsultancy support from your experts, which will help us dealing with existed problems and also technical assistance. Sharing your experience will be greatly helpful for us.

[Table IV-2] School Data Collection and Utilization in Georgia

Level of Government  Function	MoES EMIS		MoES Financial Department		MoES Teacher Professional Development Center		MoES National Curriculum and Assessment Center		MoES Educational Resource Centers		MoES Analytical Department		National Department of Statistics		School	
	C	U	C	U	C	U	C	U	C	U	C	U	C	U	C	U
Produced /Used																
Personnel schools (Teachers, non-teaching)	X			X		X		X	X			X			X	X
Asset, infrastructure, Facilities	X			X					X			X			X	X
Pupils (Enrolments, attendance)	X			X					X			X	X		X	X
School expenditure-s and revenues	X			X					X			X			X	X
Pupils performance								X	X			X			X	X
Teachers qualifications	X					X		X	X			X			X	X
Demographic (population)													X	X		
Geographic (school location)	X			X					X			X			X	
Textbook								X							X	

**[Table IV-3] Education Demographic Figures (2006)**

		Pre-school	Primary	Basic	Upper Secondary		Tertiary Education	
					General	Vocational	College	Univ.
No of Pupils	Public	72424	821	34436	571228	5500	1745	122052
	Private		1604	1659	30522			19621
	Sub-total		2425	36655	601750			141673
No of Schools	Public	1141	17	502	1792	76	34	30
	Private		27	17	218	14	222	89
	Sub-total		44	519	2010			119
No of Teachers	Public	7259	185	7468	62934	755		
	Private		309	352	5664			
	Sub-total		494	7820	68598			9145
No of population at school age								
Net enrollment rate								
Gross enrollment rate								
Transition rate							-	-
Pupil-teacher ratio					8.3			
Average class size		19	25	20	18	12	20	25
Tuition (US\$)	Public	150	200	200	200			1000
	Private	600	1500	1500	1500			3000
Others								

## References

### Georgia: Education Strategy and Action Plan (2007-2011)

For Georgia and comparator for indicators 1-13 and 15-17, and for comparator for indicators 18-19, UNESCO (2006); for Georgia for indicator 14, MoES MIS database, and for indicators 18-22, World Bank (2007); for comparator for indicators 14, 20-21 and 23, OECD (2006); for both Georgia and comparator for indicators 24-33 (in due course) <http://timss.bc.edu/>.

EMIS Development Plan. Ministry of Education and Science. Tbilisi, Georgia. Revised Edition (July 2005).

### **3. Azerbaijan<sup>18</sup>**

#### **A. General Educational Issues and Challenges in Azerbaijan**

##### **1) History of education**

Historical facts show proofs that from the beginning of the III century B.C. first schools and in the VII-VIII centuries education system was established in Azerbaijan. Azerbaijan became famous with its Higher Education Institutions in the XI-XIV centuries.

In XX century during 70 years Azerbaijan has been an integral part of the Soviet Union. In this view, the system of education of Azerbaijan shaped as constituent part of the Soviet education system. The Soviet education system comprised a number of advanced features, as well as some negative tendencies. During short time framework, this system ensured elimination of illiteracy in Azerbaijan and establishment of solid education infrastructure.

Challenges of transition period are:

- Change of ideology;
- Reformation of the content of education in compliance with the national and universal values;
- Development of new curricula, textbooks, learning materials, teaching guides and out-of-school reading materials;
- Necessity to prepare new textbooks, training aids, learning and reading materials due to transition from Cyrillic to Latin script
- About 1000 educational institutions were destroyed and 115 thousand students and about 16 thousand teachers were forcedly displaced from their native lands as a result of the military conflict over Upper Karabakh region.
- 1 million refugees and internally displaced people;

At the same time, negative tendencies of this education system became apparent. In particular, inculcation of communist ideology into the content of education, which prevented from the foundation and development of democratic values in society, centralized system of education management, preparation of study plans, curricula and textbooks without taking into consideration national specificity and traditions.

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<sup>18</sup> This paper was presented by Azad Akhundov, Chief Executive, International Relations Department and Vugar Abdulrahimov, Leading Expert, Strategic Analysis, Planning and Personnel Management Department, Ministry of Education at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

In 1991 Azerbaijan restored its state independence. The country was facing the challenge to create, within short period, its education system based on national interests and universal values.

In the first years of independence a number of problems, including political instability and collapse of all previous economic and cultural links available during Soviet times, affected seriously the formation and development of the education system in Azerbaijan.

Despite the abovementioned problems, since 1996, political stability has been restored in the country and high pace of economic development has been ensured which in turn, promoted positive changes in education system.

As a result, in subsequent period the Ministry of Education elaborated above 15 state programmes on different priority areas of education, including

- State Programme on modernization of pre-school education for 2006-2010. Within the framework of this Programme, the Pilot Project is elaborated jointly with the Asian Development Bank.
- State Programme on school construction for 2003 – 2007. Within the framework of this Programme above 300 schools were constructed during the latest 3 years.
- State Programme on elaboration of new textbooks for 2003 - 2005. As a result of implementation of this programme, all secondary school children from 1st to 11th grade were provided with free textbooks.
- State Programme on computerization of schools for 2005 – 2007. Within the framework of this Programme, it is planned to equip all schools with modern computers.
- Due to serious shortage of teachers in remote areas of the country, State Programme on ‘Pedagogical staff provision’ for 2005 - 2009 has been developed.
- State Programme on education for children in need of special care.
- In compliance with the credit agreement with the World Bank, reforms are being implemented on the following components:
  - quality of education and its compliance to real needs,
  - efficiency and financial reforms,
  - school grant program,
  - management, planning and monitoring capacity,
  - project coordination and monitoring

It should be mentioned, that funds allocated to education are increasing significantly. For example, funds allocated to education from the state budget in 2006 exceed the similar index for 2004 by 28%.

## **2) Structure of education**

In accordance with the Law on Education of Azerbaijan Republic the following structure of education system is adopted:

1. Pre-school education (day nursery houses–1-3 years old children, kindergartens–3-6);
2. General Education (primary– 6-10, basic education–10-15, secondary education–15-17);
3. Vocational education (professional schools, professional lyceums) – 1-3 years; Secondary specialized education (technical schools, colleges) – 3-4 years;
4. Higher education (Bachelor degree programme–4 years, Master degree program (institutes, universities, academies, conservatories)–2 years degree course
5. Post Graduate Education (Post-diploma studies for Doctoral degree–3 years, In-service training–6-9 months, Specialized training–up to 3 months)

### **a) Pre-school education**

Development of pre-school education system is one of the main priority directions of education policy.

Ministry of Education has identified prospective development focal points in order to improve the pre-school education. Long-term activities in pre-school education are:

1. Development of new curriculum that meets contemporary requirements;
2. Improvement of existing curriculum for staff training and in-service training, as well as organization of training courses for instructors;
3. Learning and applying international experience on pre-school education, contemporary models and mechanisms;
4. Improvement of the existing financing mechanism;
5. Providing necessary conditions in kindergartens and schools in order to involve the five-year old children in compulsory pre-school education.

At present there are 1761 pre-school education institutions in our country attended by 109,867 children.

### **b) General secondary education**

General secondary education is the largest sector of Azerbaijan education system. The general education in Azerbaijan starts from the age of six. It is

compulsory and realized in three (3) phases: primary education (I-IV grades), basic education (V-IX grades), secondary education (X-XI grades), IX and XI grades being graduating ones. On completion of these education levels an appropriate certificate is given to students based on the results of the appropriate examinations.

The major challenges in general secondary education are the following: **Weak material, technical and instructional basis, an urgent need for construction of new school buildings and capital repair of majority of existing schools.**

At present, 4,525 secondary schools function in our Republic. 174,490 pedagogical staff is engaged in work with education and training of 1,531,226 students studying at these institutions. 32,967 students study at 53 lyceums and gymnasiums in our country. 6,047 students study at 13 private general secondary schools.

### **c) Vocational education**

A priority area for the state, the development of this educational stage should fulfill the mission of providing specialists for developing economy, industry, and production areas. Duration of study in vocational schools is 1–3 years (professional schools, professional lyceums).

In order to improve this sector, development prospects of the vocational and professional education of Azerbaijan have been identified based on the analysis conducted by the Ministry of Education and recommendations made by international organizations:

- a) Improvement of legislative basis ;
- b) Development of a national strategy on development of vocational and professional education;
- c) Strengthening of material, technical and instructional basis of the existing educational institutions, providing them with modern equipment and supplies, as well as Information Communication Technologies (ICT);
- d) Improvement of the training of engineers and teaching faculty for vocational and professional educational institutions;
- e) Development and applying of new curricula on in-service training of the managers, engineers, and teaching faculty of the educational institutions;
- f) Sending specialists in vocational and professional education to foreign countries on study tours in order to learn the international experience;
- g) Development of a new economic model for financing vocational and professional education and so on.

At present, there are 107 vocational schools and 46 professional lyceums in the country. 23,818 students study and 6,760 managers, engineering and teaching staff, and masters on production training work in these institutions.

#### **d) Secondary specialized education (Technical schools, Colleges)**

Young people are eligible for admission to technical schools or colleges after completion of basic or secondary education. Duration of study in secondary specialized schools is 4 years (after completion of basic education), and 3 years (after completion of secondary education). Main directions of the reformation of secondary specialized education are:

- a) Establishment of a system for the development of specialists in secondary vocational education;
- b) Strengthening of ICT provisions for educational institutions;
- c) Establishment of a contemporary financing system;
- d) Enhancement of management and planning skills in educational institutions.

There are 56 public secondary specialized education institutions. 53,745 students study for different specialties in these institutions under supervision of 6897 teachers. A total of 3,127 students study in four private secondary specialized education institutions.

#### **e) Higher education**

1. Higher education has the following levels:
2. Bachelor programme - 4 years
3. Master's programme - 2 years (institutes, universities, academies, conservatory)
4. Post-diploma research for Doctoral degree - 3 years
5. In-service training - 6-9 months.

Tendencies of further development of Higher Education:

- a) Steps have to be taken towards the integration into the European system of higher education under the requirements of Bologna process;
- b) Enhancement of management and planning capacity, arrangement of marketing services;
- c) Development of new curricula for teachers' in-service training;
- d) Appropriate State Program on strengthening of material-technical and teaching resource base shall be prepared;
- e) Complete by the end of 2007 development and introduction of standards of education and textbook on "Foundations of Education" for training of primary school teachers in line with new strategy and concept of teacher development, expand scientific researches on problems in education;
- f) Apply new mechanisms in management of education quality, monitoring and evaluation of activities of educational institutions;
- g) Implement the program on "Computerization and informatization of the system of higher and secondary vocational education".



One of the most important achievements in the sphere of higher education and international relations is the acceding of Azerbaijan to Bologna process which will facilitate integration of our country into the European Higher Education Area (appropriate document was adopted during at the meeting of European Education Ministries held in Norway in May, 2005). At present, it is necessary to complete implementation of the two-cycle system of higher education and transition to the Bologna process' credit transfer system which will in turn, provide the necessary conditions for broader mobility of students and meet their rights and freedoms in the learning process. It is also important to establishment a contemporary attestation and accreditation system that ensures effective control mechanisms over the quality of education. In general, it is planned to fulfill the goals of Bologna process by 2010 and appropriate activities are implemented in this direction by the Ministry of Education.

There are 48 higher education institutions, including 29 Public higher institutions, 5 specially-assigned (special-purpose) and 14 private higher institutions. A total of 130.000 students study in higher schools of Azerbaijan and 12.000 teaching staff and faculty-professors are engaged in teaching process.

### **3) International relations**

International relations and joint activities with international organizations are expanded with MoE. MoE has established educational relations with more than 30 countries of the world, above 20 international organizations (UNICEF, Council of Europe, European Union, Open Society Institute Assistance Fund, United Nations, "German Academic Exchange Service (DAAD), TEMPUS, British Council, ACCELS, IREX, "Project Harmony", Peace Corps, "World Learning", International Medical Corps, ISESCO, Norwegian Refugee Council) and is conducting more than 70 projects and programs.

Taking into consideration the importance of specialist training the "State Program on education of Azerbaijani youth abroad during 2007-2015" was developed and approved by the President's Decree. Under this Program the number of students to study abroad in all study fields will constitute 1000 students annually and the total of students during 2007-2015 will constitute 5000 students.

As to the joint projects and programs of the Ministry of Education and international organizations, UNESCO is notable for international relations. This cooperation is implemented on some activities on these directions are continued, like as:

1. "Associative schools"
2. "Inclusive education"

3. "Education for all"
4. "Improvement of technical vocational education"
5. "Establishment of UNESCO sections at the institutions of higher education".

In order to apply and develop the use of ICT in our education system we need assistance of UNESCO and other donors in the sphere of preparation of qualified teachers for schools and higher educational institutions. This assistance can be provided in the form of teacher training seminars with participation of international consultants, implementation of joint projects and programmes, elaboration of up-date curriculum for "informatics" subject taught in general schools as well as consultancy services in the field of the use of ICT in education planning and management.

#### **4) Education reforms in Azerbaijan**

*According to the Constitution of Azerbaijan Republic, every citizen has the right to free general Education. All necessary conditions are created in the Republic to provide constitutional right of the citizens to get free education. Citizen of Azerbaijan has the right to education irrespective of his/her race, nationality, social position, language or age. The state guarantees equal rights of citizens to education.*

"Reform Program of Educational Sector in Azerbaijan Republic" which was approved in 1999 by the President of Azerbaijan Republic, has determined future improvement concept and strategy of educational sector in Azerbaijan.

The Education Reform Project is implemented in the sphere of general secondary education in Azerbaijan on the basis of the World Bank Project on education reforms (the First Credit Agreement in 1999-2004) has covered some directions of activity:

- Reforms in the field of curriculum, development and provision of methodological materials;
- Reforms in the field of in-service teacher training;
- Monitoring and evaluation of the Project;
- A number of important activities have been implemented in the framework of the project;
- In the direction of the content reform new modern curricula, text-books and methodological aids for pilot schools, new curriculum patterns (on two (2) subjects (Mother tongue and Mathematics) meeting international requirements have been prepared;
- The new concept of students' achievement assessment has been developed, evaluation models have been worked out, national assessment has been carried out;

- Training courses, workshops, seminars and conferences have been held for the pilot school teachers;
- Trainings covered the modern problems of general education, such as, the use of active and interactive teaching technologies, school curriculum, students' achievement assessment, monitoring themes of education quality;
- As an exchange of experience a delegation of employees of the Ministry of Education and pilot institutions have been sent abroad for educational purposes. They were educated at leading universities and colleges of the world on special scholarships of the Ministry of Education;
- All the pilot institutions (20 (twenty) schools, 7 (seven) organizations on improvement of professional skills) implemented activities to improve financial and technical basis.

Since 2003, new Reform Project on the Second (II) Credit Agreement has been implemented by the World Bank in Azerbaijan. The Reform Project covers ten (10) year period within 2003-2013 (the first phase - 2003-2007, the second phase - 2007-2010, the third phase - 2010-2013) and currently we realize the second stage which covers 2007-2010.

The implementation of reforms is intended in the framework of the Education Sector Development Project. The Programme comprises the following 5 components:

**Quality of Education and its compliance to real needs.** The objective of this component is to enhance the quality and relevance of general education through curriculum reform, teacher preparation and provision of textbooks and reading materials.

**Efficiency and Financial Reforms.** Activities on subcomponents of financing and budget reforms, rationalization and improvement of logistical base of schools are being realized within this component.

**School Grant Program.** Grant projects on creating equal opportunities in general education and application of innovations at schools are being realized within this component.

**Management, Planning and Monitoring Capacity.** This component would focus on strengthening the management and planning capacity in the Ministry of Education to use available resources more effectively. Information system, management and planning opportunities on evaluation of student achievements are being realized within this component.

**Project Coordination and Monitoring.** The objective of this component is to strengthen coordination and monitoring mechanisms under the project, to

provide the public with information and do some other researches. The chief aim of this project is to raise the learning achievements of a school-aged child to increase the efficiency of the general education.

## **B. The Use of Information Communication Technologies (ICT) in Azerbaijan Education System**

The use of information and communication technologies in education system is a complex challenge that requires the joint solution of a number of issues. The unique feature of using the ICT in teaching process is that here a computer is not only a tool that facilitates a teacher's work and makes it more efficient, but also a learning object.

The Program on providing the general education schools with information and communication technologies (2005-2007) was approved by the Order of the President of the Azerbaijan Republic in August 21, 2004. The goals of the Program are to provide the general education schools with modern computer equipment, disseminate and apply contemporary electronic teaching resources in Azerbaijani language, electronic textbooks, electronic libraries, digital teaching resources, distance learning services for the students, educational websites.

In 2005-2006 1,104 schools were provided with ICT and other equipment, while 437 schools received notebooks and projectors. 4,000 teachers attended ICT training. Electronic study materials and visual aids have been developed and distributed to schools for use with subjects of Azerbaijani history, biology, chemistry, physics.

For the last year of implementation (2007) of the Program it is planned to provide 2,144 schools with ICT and other equipment, as well as train up to 10,000 teachers. At the same time a new program for provision of the entire education system with ICT during 2008-2012 is under preparation .

Ministry of Education is doing a preparatory work on applying the Electronic School project. It is envisioned that this project will create necessary conditions for flexible management in schools, strengthening of relations between the parents and school, monitoring the attendance of students, expansion of the inter-school electronic relationships, and communication of student achievement.

One of the major demands of our country's social and economic development, and a principal factor that prescribes the necessity for information technologies in education field is developing in all of the students the skill to use information technologies regardless of the level of education.

The issues that have been described above, in terms of introducing ICT to education sector, are concerned to the strengths of ICT. But as to the weaknesses of ICT, they are the followings:

1. Schools don't effectively use the ICT equipment provided to them;
2. Some schools don't have computer literacy teachers and subject-specific teachers who have attended certain trainings still lack necessary skills in ICT application;
3. The methodological resources are not sufficient;
4. The school managers cannot effectively employ ICT in the process of teaching and management.

Taking into consideration the particular role of ICT in education in contemporary period, it is foreseen to carry about several objectives:

1. Expansion of the possibilities for using ICT in management sphere;
2. Regularly organizing professional development courses on ICT for management body, managers of educational institutions, and subject-specific teachers;
3. Integration of a course on ICT to the content of in-service curriculum content;
4. Broadcasting by mass media of scientific and popular programs and special rubrics on the use of ICT in educational process;
5. Development of new standards on information and communication technologies;
6. Development of requirements set for knowledge of information and communication technologies considered obligatory for teachers and students and a mechanism for monitoring them;
7. Development of textbooks, instructional materials, and methodological guides on the use of information and communication technologies in education;
8. Development, assessment, dissemination, and elaboration of application mechanism of new generation electronic textbooks;
9. Development of modular education components on information and communication technologies, and elaboration of a mechanism for applying the respective modules in professional development programs.

### **C. The use of ICT in Education Planning and Management:**

#### **Education Management Information System (EMIS) in Azerbaijan**

Azerbaijan has undertaken a major reform program in the education sector, and more specifically in general education. The main purpose of this reform program and strategy is to address many key sectoral issues, to improve the quality of education. The reform project consists of 5 components:

1. Quality of Education and its compliance to real needs.

2. Efficiency and Finance Reforms.
3. School Grant Program.
4. Management, Planning and Monitoring Capacity.
5. Project Coordination and Monitoring.

Among these components, Management, Planning and Monitoring Capacity is one of the main component and it has also its subcomponents - **The Management and Planning Capacity** and **Education Management Information Systems subcomponents**.

**The Management and Planning Capacity subcomponent** of the Education Sector Development Project (ESDP), in collaboration with various MoE units, undertakes major efforts with regard to capacity building in contemporary education management practices, introduction and development of strategic planning capabilities within the MoE.

We'd like to mention that the Ministry of Education in Azerbaijan considers planning in particular strategic planning process as a tool for provision and strengthening of co-ordination, decentralization, monitoring and accountability, as well as development its capacity in these areas. **Planning** is a process that requires the implementation of the processes, events and activities which takes the future into account.

But **strategic planning** is of great importance in the development of education quality. While applying the planning process the Ministry of Education conducts the strategic analysis on every sphere of the educational system, coordinates the activities of different units, and improves the existing management mechanism. Our Ministry has also its own 3 year Strategic Plan and it is realized very efficiently. The aim of writing the Strategic Plan for MoE of Azerbaijan Republic is to coordinate the mission, vision and values in accordance with priorities of state education policy and to implement the operational plan prepared in accordance with this. Operational Plan is the annually updated section of the Strategic Plan and it is prepared for one year and at the end of school year the activities that are described in the Operational Plan are reviewed, monitored, evaluated and revised for the coming year. Our Strategic Plan contains:

1. Mission Statement
2. Vision Statement
3. Values
4. Efficiency of Activity
5. Goals
6. Key Priorities of Education Development

Even though, we realize some long-term Programs and we put those Programs into the Strategic Plan of the Ministry of Education.

One of the most characteristic features of the modern period is the information age and development of information society. And with this, we can note that one of the key issues in planning is the implementation of Information Communication Technology (ICT). The purpose of planning for technology integration is to increase student performance. ICT is used as the learning object in education system and as a tool in teaching process, in education management and planning and in applied educational researches. Planning that takes direct aim at the educationally productive use of school computers is one of the most important tasks a school district can undertake. In Azerbaijan technology is incorporated into educational planning activities and processes. The use of technology should be part of every school administrator's vision and can also play an important role in helping educators track accountability and student progress. According to the issues that are noted on planning for technology, we can mention that the use of data management systems is just one of many ways in which schools and regions can use technology effectively with careful planning. From this point of view, it can be expedient to inform about the other subcomponent - Education Management Information System subcomponent - of the Education Sector Development Project.

**Education Management Information System subcomponent** is implemented within the framework of the Education Sector Development Project. The main objective of this subcomponent is to assist the MoE to establish a comprehensive education management information system in order for managers to monitor the system for which they are responsible, and develop policy and action plans based on accurate and timely information.

The specific objectives of this subcomponent are as follows:

- To define and provide appropriate personnel and other resources for EMIS team;
- To define the policy of planning and EMIS activities;
- To draw up the Master Plan of EMIS;
- To plan, to prepare and to implement the coding procedures of schools;
- To set technical conditions and tender documents for EMIS's equipment and computer programs and to purchase equipment and computer programs;
- To prepare the system of collecting data on School Mapping for the subsystem of EMIS, to test and change the same subsystem; to run the system for School Mapping in order to collect data;
- To work out the subsystem of School Mapping, to test and change, to prepare the subsystem and to hold training in order to improve professional skills on School Mapping;
- In compliance with the choice of the Ministry of Education and EMIS team, to work out the second, third and fourth subsystems for EMIS, to

test and change; to work out the same subsystems and to hold training for their use;

- To prepare and implement the training plan for EMIS's team;
- To prepare and implement a plan for an efficient use of computers in Regional Education Departments;
- To define a reliable system program for EMIS.

Supporting this action EMIS department functions at the Ministry of Education for the management and implementation of the EMIS. The main objective of the department is to provide the education management system of Azerbaijan with information and to implement the state policy of information and communication technologies in education. EMIS is linked with the district education officers. The department runs its activity on the basis of current and perspective plans (Strategic and Action Plans) of the Ministry together with the departments of MoE, with education management organizations that are subordinated to the Ministry of Education.

EMIS department fulfills the following main objectives:

1. Working out and realization of the education management information systems;
2. Preparation, testing and implementation of the education management information systems;
3. Working out and realization of the Programs on the application of ICT in education;
4. Assistance in organizational teaching and methodology in the implementation of the state policy linked with education management information systems and School Mapping in educational institutions;
5. Participation in the implementation of an extensive training program for EMIS, School Mapping and ICT and its link with other components of educational reform of the same activity;
6. An active participation in the establishment of the scientific-technical basis for the solution of the organizational problems of distant education;
7. Solving the problems overcoming in setting up electronic archive and electronic library;
8. Organizing the provision of all educational institutions that are subordinated to the Ministry of Education with information;
9. Setting up the cooperative computer network;
10. Using the world internet for the Central Aparatus of MoE and arranging the websites on "Education";
11. Provision of the information security and preserving more important information;
12. Formation and improvement of national education resources;
13. Establishing information basis for legislative documents linked with information provision for education system;



14. Preparation of the state standards of information communication technologies in all spheres of education and provision of its applying;
15. Working out main directions for information provision of education and suggestions on the mechanism of their implementation;
16. Assisting the development of information provision infrastructure of education;
17. Organization of information system in the sphere of education including the use of development strategy of computer-based information system in educational institutions;
18. The use and development of new information technologies in all phases of education;
19. Provision of information security in the atmosphere of unique information and education;
20. Working out suggestions on information provision of education with the personnel in the educational institutions and the Institute of Educational Problems that are subordinated to the Ministry of Education.

We'd like to mention that all data are collected and recorded both in electronic and paper formats. So the data are sent by means of computers from the Regional Education Department of 3 pilot regions (Ali-Bayramly, Ujar and Ismayilly) that were defined by mutual consent of the Ministry of Education and proper ministries, but in other regions preliminary defined questionnaires are completed and sent to the Ministry of Education. The data are stored in the database of EMIS department.

In order to achieve the educational quality, the activities of each stage must be planned, controlled, monitored and assessed. The planning process is of monitoring character in the educational sphere. Each function of the management is presented as a basic object of the analyzing, and the monitoring is referred to activity goals, planning, organization and realization.

## **4. Mongolia <sup>19</sup>**

### **A. Country Profile**

Mongolia is located in the heart of Central Asia with an area of 1,560 million square km, bordering the Russian Federation to the north and the People's Republic of China to the south, east and west with 2.5 million population. In 1999, the percentage of population aged under 15 years was 35.8 and people

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<sup>19</sup> This paper was presented by Gantumur Selenge, Education Officer, Mongolian National Commission for UNESCO at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

aged under 35 make up 75 percent of the population, with 58.6 percent urban inhabitants (NSO, 2000). The official language is Mongolian.

## **B. Structure of the Education System in Mongolia**

The national education system consists of a complex set of successive education programs including formal schooling and a broad range of non-formal education activities devoted to the various target groups of the population. In the field of educational institutions, there are kindergartens, primary schools, secondary schools, universities, colleges and vocational educational institutions.

The following levels of education and corresponding formal schooling institutions in Mongolia are:

1. Pre-school – kindergarten  
At the pre-school level, the enrolment rate was 40.0 percent in 2005.
2. In contrast to international K-12, general education in Mongolia is 11 years (5-years primary, 4-years secondary, and 2-years upper secondary). Basic education (5+4+2) is compulsory and provided by the state free of charge. In total, there are 749 primary and secondary schools nationwide. The enrolment rate of 7 years old in first grade of primary schools is 92 percent.
3. Technical education and vocational training (TEVT) is provided by the professional training and production centers. As well some branches of colleges and universities provide education in TEVT. In May 2002, Law on Vocational Education and Training was adopted by the Parliament.
4. Higher education: (diploma, bachelor, master and doctorate) are awarded by colleges, higher institutions and universities. Overall, there were 160 000 students attending higher and vocational training institutions in 2005.

Non-formal education centers have been playing an increasing role in promoting literacy and providing education to dropouts or to children without access to school. As of the end of 2001, 289 education specialists were working in 337 non-formal education centers. In addition, the Non Formal Education Center has re-organized as the National Non-Formal Education and Distance Training Center.

Non-formal learning experiences include training without formal credit and equivalency programs. Non-formal education, meanwhile, embraces a much broader section of the population, in implementing a wide range of service goals: promoting literacy; improving the general education level of the population; providing opportunities for vocational training, retraining and professional development; and assisting self-learning initiatives. One of the

most important areas of growth in the non-formal sector is home-based pre-school education. The system of non-formal education is at the beginning of its development.

Public education is under the supervision and authority of the Ministry of Education, Culture and Science (MoECS) and each aimag (province) has an Aimag Education and Culture Department (ECD) which operates as the local education authority.

Recently, the Parliament of Mongolia adopted Law on Education and made a decision to transfer to 12 grade general education system in 2008.

In the framework of educational reforms, Mongolia sets objectives to:

- Conduct research on number of seats in training and dormitory facilities, supplies of teachers and budgeted expenses of schools in regard to transferring to 12 years' schooling system and implement the preparation works for transferring in accordance with plans and schedules
- Change training programs and syllabus of primary and secondary schools in conformity with 12 years' schooling system, and organize trainings for teachers and administrative staff
- Identify content, methodology and learning environment for children of 6 and 7 years old children to learn in the school
- Develop subjects' content based on pilot test in accordance with moving 12 years' schooling system

### **C. The Use of ICT in Education Sector**

Today, Mongolia has been facing the objectives to orderly resolve the urgent question on entering the 21<sup>st</sup> century, the new era of the informational technology, enhancing the quality and efficiency of the education of own country, providing the human resources development to introduce new training method and technologies, promoting the rural education, and consisting the pleasure condition for the training.

The main factor, leading the knowledge to the economic relation and making the social and educational status to be changed, is Information and Communication Technology (ICT). The ICT not only changes and renews the knowledge, society and education as well as our lives, but also it is the main factor that supporting their developments.

Mongolia started using Information and Communication Technology (ICT) in secondary education relatively late. The computer training and informatics has been included as a subject in the secondary school curriculum in Mongolia since 1988 and in the university curriculum since 1982.

In January 2002, representatives of government, the private sector and NGOs sat together to develop a mid-term strategy and action plan to implement “National Vision for ICT development of Mongolia up to 2010 (Vision-2010)”. Both strategy and action plan had three major components, each outlining activities, specified time lines, an organization responsible for implementation and the donor or national support required to achieve the objectives. Within this concept, following activities related to ICT in education are to be implemented:

1. Create structure to provide education on ICT for all citizens;
2. Set up knowledge and education based high tech centers in Ulaanbaatar and in the centers of the socioeconomic development regions;
3. Create a set of opportunities to access ICT at mobile sights running sustainable common services, libraries, rural schools;
4. Create info structure for education;
5. Resolve in detail human resource development issue of the national info structure (user, trainer, specialist);
6. Introduce electronic version of library system such as ordering, searching and others;
7. Develop lifelong learning through open and distance learning;
8. Introduce electronic services such as leisure and entertainment (virtual libraries, museums, etc.,) (Government of Mongolia, 2000)

Meanwhile, the Ministry of Education, Culture and Science (MoECS) has used Vision-2010 as a model to implement ICTs in the education sector, developing an action plan which was approved in 2001. MoECS’s vision for ICT in education has four major components:

- Training (to utilize all possible resources to introduce ICT in all levels of education)
- Hardware (to provide hardware and software necessary for training in ICT)
- Teaching staff (to provide support for highly motivated staff)
- Information ware (to develop a sectoral information and database to improve conditions for better information services).

The Informatics subject is being taught to from 8<sup>th</sup> to 11<sup>th</sup> grade students in accordance with the curriculum. Within the informatics curriculum, the pupils are taught logistics, programming languages and applications of Microsoft Office. There are 4776 computers are available in 524 secondary schools, or nine computers per school in average (MOECS, 2004) (table I). Most of the computers are used for teaching. 102 general education schools connected to e-mailing system but do not use it on regular basis since there is no budget to cover telecommunications fees.

Although it is appreciative that informatics subject is taught in grades 8-11 of general education schools, however, there is a lack of the professionally trained staff everywhere. There is a need for total revision of staffing in schools and

development of pre- and in-service ICT training for all teachers and administration of schools because of low computer penetration, lack of professionally trained informatics teachers in rural schools.

The development of manuals, guidelines and textbooks (including e-textbooks and e-contents) needs to be addressed.

To utilize the ICT in training, the optimal way should be chosen not only choosing and providing with the only technological facilities, but also, studying and thinking specifications of the trainees, their knowledge creating process, influence of technology to the teachers and trainees, what will be their responsibilities, and how to reflect it to the program in details. In order to use the ICT in training, teachers should obtain knowledge and ability on informational technology, and should be trained in the methodology of new technology utilization; trainees should be taught and learnt the independent study, problem solving, co-relating, working partially or in partnership, and attend the extra school trainings.

The following are essential to be focused on in utilization of the ICT in training:

- Considering the utilization of ICT as a part of the educational renovation process, to reflect the questions on introducing ICT into school activities and training, and using to enhance the rural population education
- To start reflection work of the ICT utilization in the all stage school curriculums
- To learn the best practices of utilization of the digital divide in the rural education
- To make basic study on how the ICT is introduced in the education sector, especially, in training activities
- To renew and develop the books, manuals, and e-devices, on need and requirement of the ICT utilization in the classes, schools, and education, and included ideology, tendency and methodologies for its instruction for teachers, school managers, and students.
- To develop new curriculum for the training of teachers in the new technological facilities and new trend during the process of changes to use the ICT in the training
- To make changes in the thought of school managers and teachers on traditional teaching and create believe in utilization of the ICT in training
- To develop methodology which identifies what duty imposes the utilization of the ICT in the training to teachers, trainees and even to the technology, what shall be changed and how to affect them. Particularly, to mainly focus not only on technology, but also on teachers and children, as well as used technologies and correction between them

This year Mongolia Government adopted Education Master Plan. The Master plan to develop education of Mongolia for 2006-2015 is directed to identify long term strategic policy and main trends for development of education by the Government till year 2015. By this Master Plan, we identify four big areas, for urgent assistance, that is connected with ICT education namely:

- Organize training for teachers on ICT-based training
- Development of manuals, guidelines and textbooks (including e-textbooks and e- contents)
- Utilize educational TV and expand the application of internet and new ICT in school level
- Establish centers to provide ICT training and consulting services

#### **D. The Use of ICT in Education Planning and Management**

Prior to 1991, a number of Ministries had shared responsibilities for ensuring the successful operations of education institutions. These ministries were considered as vehicles for implementing decisions and regulations, and were not considered to be policy or decision making agencies. All education institutions had been owned and operated by the Government and were subject to all applicable governmental policies and regulations. In 1992 the Ministry of Education, Culture and Science (MoECS) was established, based on the Education Law 1991 and all science and educational activities were subsequently placed under MoECS. Since then, MoECS's role has greatly increased as a major player in the development of science and education. Its scope of activities now includes policy formulation, analysis, educational planning, and educational development (programme approval, staff development, institutional accreditation, accountability for maintenance of academic standards). The reform policy of the MoECS focuses on five aspects:

- Management and organization;
- Educational structure;
- Contents and standard of education;
- Economic and financial aspects of education; and
- Rights and responsibilities of participants in educational relations, and their social issues

Within the framework of education Master Plan, the Mid-term action plan for education planning and management through the use of ICT in Mongolia for 2006-2010 presents:

1. Inter-sectoral database and integrated network on early childhood services will be created for better monitoring evaluation and policy development and its management.
2. The education information and management system and database will be established.
3. A national system of monitoring and evaluation for non-formal education will be established.

4. All educational institutions, schools and kindergartens will be connected to internet, and introduction ICT into training, information exchange, monitoring, evaluation and registration systems will be done.
5. Complex schools and schools in regional centers will be connected to national distance education network, and supply necessary equipment.
6. Establish centers to provide ICT training and consulting service.
7. Optimize assortment of documentation of school's administration and training departments, and introduce new software and technologies in documentation and information exchange

Recently, the Government approved an E-Mongolia National Program. The vision of E-Mongolia National Program is to establish the information society and the foundation of the knowledge based society in Mongolia by enhancing extensive application of ICT in all society sectors.

The e-education goals within framework of this E-Mongolia program are:

1. Achievement of an average international ICT literacy level by 2012 (80% of all capable people)
2. 70% of soums, 100% of province centres and cities will attend the distance leaning system by 2012
3. Creation of the model e-school (50 % of schools will have e-school capability by 2012)

E-Mongolia National ICT policies and strategies in the education have been elaborated and included in the Education Master Plan, but ICT-based operational components for policy implementation are weak in this Plan, including the application of ICTs for education provision and management, capacity building in translating the ICT policy into actions, establishment and operation of ICT-based management and methodological bodies (centres) for distance learning and training for policy makers, school managers, administrators, specially in-service teachers.

There are some activities started to encourage the development of content on CDs, web site and other training applications, which could provide information and possibilities to use computers for document processing, communication through network and development of information search skills.

The non-formal education is aiming to provide conditions necessary for adults to learn to work on computers, to handle document processing, communicate through networks and search for information.

Teleconferencing room was facilitated at the MoECS, which connects Ulaanbaatar with 21 aimags' Education and Culutural centers, used for the in-service real-time training.

## **E. EMIS in Mongolia**

Mongolia is one of world's most sparsely populated countries, with an area of 1.6 million square meters and a population of 2.5 million. The country is divided into 22 *aimags/provinces*, the second largest administrative division in the country, and the 22 aimags are sub-divided into 321 *soums*. 47% of the total population of Mongolia resides in soums; 11% are in aimag centers (provincial centers), and 42% are in the larger 3 cities.

Mongolia has a population density of only 1.6 people per square kilometer, which is one of the lowest densities in the world 65% of the total population lives in urban areas. Due to the low population density and poor infrastructure, rural people have difficulties accessing basic ICT related services.

The number of branches and entities that run activities on the basis of information by establishing management information systems is un-adequate in the educational sector of Mongolia. The MoECS is responsible for development of criteria for monitoring results of the implementation of the Master Plan, collection of information based on educational management and information system, creating database, undertaking policy analysis and evaluation and reporting on implementation of the Master plan to the Government, donors and public.

For the educational sector the systems of information collection, integration and processing are fixed activities. However, there have been some deficient issues of worth attracting related to the development, technique and technology progress of the educational sector.

Since 2006 the Ministry of Education, Culture and Science has been implementing package software for the purpose of establishing management information systems by setting up database of all the general education schools.

However, in one hand, the completion of the general education schools' database at nationwide level requires massive human forces, and the activity of inputting information truly, and immediately since the first stage is so slow on the other hand. In Mongolia there are no specialists for data collection, this activity is usually implemented by secondary school teachers at school level, and teachers submit collected datas to soum, and from soum to aimag centres. At the aimags, Education and Culture Centres are responsible to sum up all datas at aimags' level and submit to the MoECS. There have been permanent difficulties of spending time, and human forces for the activities of collecting, because data is collected in a paper form and sometimes in CDs.

Therefore, there have been requirements of conducting trainings of inputting first stage information and establishing information systems at the general



education schools. The training will be very important for establishing the nationwide database of primary, basic, complete secondary education.

Collected school data is placed at web pages, thus everyone who is interested can explore it. The main users of education data are following people (table III):

- Governmental policy and decision makers
- Local governors and staff
- Leaders and workers of educational organizations
- People involved in the educational sector service
- Nongovernmental organizations and private sectors
- Citizens

In country level, a manual is used for the data collection. And for filling out the data, special forms which are adopted by the National Statistics Office, is used. Once or twice a year, national training is conducted for the data collectors.

#### **F. Improving Education Planning and Management through the Use of ICT**

According to the Mongolian Governmental resolution, med-term strategy for the development of the ICT in Mongolia and the plan on the operations for its implementation were approved and range of investment was made into the whole social sectors for the construction of the infrastructure of the ICT. Particularly, the works of computerizing all schools and connecting them with the internet have been made in the proper stages. Computer usage and training in urban areas are continuous in relation to the infrastructure development, however computer usage and training at rural schools are limited by computer hardware and skilled teachers supply moreover electricity supply. Many soum has electricity problem due to their financial strengths to pay its fee. Also most schools lack trained personnel to handle and configure their computers except few teachers with basic computer skills who does not even fully understand and utilize the computer systems.

Here, the policy on wider utilization of the digital divide and ICT is being implemented for the enhancing the education level of rural population and within the framework of the succession implementation, the question on infrastructure is being strongly raised and in order to resolve, range of works are being done on the utilization of the renewable source of energy.

As the 2000 early, in the educational institutions of the country, there were about 600 computers at the rural schools, now there are 4776 computers are available in 524 secondary schools, or nine computers per school in average (MOECS, 2004). Students per computer ratio were 1:80 as of 2004.

In education and science technology sectors, 16 universities are connected to the Internet network “Erdemnet” and 40 thousand of teachers and students are being provided with the service through it.

As a result of the connection of the local and cities over 70 secondary schools and the education and cultural institutions to the internet, the arrangements of the upgrading training of the rural teachers from distance with the use of digital divide has started to bear fruits. We see that it is essential to provide the secondary schools and educational institutions with computers and ICT facilities with propose to introduce the ICT into education sector. In order to introduce the ICT efficiently, it should be started from its reflection to the educational policy and utilization of them in the training and school activities. From now, in order to introduce the ICT efficiently, our goal shall be reflection to the education renovation policy, its broad utilization in the enhancing the education of the rural population, and within formal and informal training scope, both teachers and trainees will be trained in relating with, thinking over, criticizing of information, assessing the information, its quality and resources and active utilization of them.

### **G. Support and Assistances for Development of ICT in Education Sector**

For Mongolia with its vast territory, low population density and weak infrastructure development, it is becoming apparent that the ICT is now seen as necessity and one of main opportunities for expanding the access to education, improving the quality of education and achieving the EFA goals. First of all, it is essential to create a system of providing universal ICT education. In other words, there is a need and requirement to improve the application of ICT for education provision and management, to establish a flexible system to organize and implement ICT training at all levels of education.

Thus, we need some urgent assistances and supports on the following:

1. Conducting training for school managers, administrators, teachers and specially, in-service teachers.
2. Conducting seminars, technical workshops on ICT –based management and training for national policy makers from the Ministry and Educational Departments of aimags (provinces) and all national school managers, administrators and those who are in charge for the operation of ICT as tools at the Ministry, Departments and schools and other educational organizations.
3. Within the activities to reform the education system, it is very important to renovate ICT education curriculum.
4. Supporting appropriate technical equipments in education sector
5. Establishing and developing the ICT-based Technical Service centre which would support to improve the quality of ICT-based training

activities, developing appropriate technical services and measures for sustainable maintenance of ICT network and computers.

## **H. Conclusion**

Recently great emphasis was given for setting up ICT infrastructure and providing computer literacy. At present, specially designated policy is needed to support effective use of ICT in education and to incorporate it into the policy on educational innovations and activities like teaching and learning.

Impact of ICTs on students' behavior, development of student skills to use ICTs for their life long learning activities and teacher student relationships are some critical issues to be considered for developing curriculum. Internet and computers are not widely used for teaching except in Informatics class. On the other hand, there is not much opportunity to initiate the trainings based on ICTs at the schools, like in developed countries. This is directly related to the hardware supply and the infrastructure problem.

We do not have experiences regarding computer and technology based training except few actualized experimental projects for limited audience. Considering above mentioned situation and current circumstances, it is appropriate to improve Informatics teaching and to initiate ICT education on the basis of informatics subject with direct involvement from informatics teachers.

**[Table IV-4] Number of computers per secondary school, June 2004 (MoECS, 2004)**

	Aimags	Number of schools			Number of computers used for teaching			Number of computer per school		
		Total	Secondary	Complete secondary	Total	Secondary	Complete secondary	Total	Secondary	Complete secondary
1	Arkhangai	21	7	14	176	36	140	8	5	10
2	Bayan-Ulgii	22	5	17	191	28	163	9	6	10
3	Bayankhongor	23	16	7	154	82	72	7	5	10
4	Bulgan	19	9	10	141	48	93	7	5	9
5	Govi-Altai	23	16	7	184	112	72	8	7	10
6	Dornogovi	17	10	7	137	62	75	8	6	11
7	Dornod	23	10	13	178	51	127	8	5	10
8	Dundgovi	19	14	5	138	84	54	7	6	11
9	Zavkhan	30	12	18	208	64	144	7	5	8
10	Uvurkhangai	23	2	21	192	11	181	8	6	9
11	Umnugovi	16	12	4	124	73	51	8	6	13
12	Sukhbaatar	14	10	4	108	59	49	8	6	12
13	Selenge	30	7	23	248	39	209	8	6	9
14	Tuv	30	14	16	206	76	130	7	5	8
15	Uvs	23	14	9	205	93	112	9	7	12
16	Khovd	21	-	21	158	-	158	8	-	8
17	Khuvsgul	27	6	21	196	30	166	7	5	8
18	Khentii	24	16	8	165	84	81	7	5	10
19	Darhan-Uul	12	2	10	195	10	185	16	5	19
20	Ulaanbaatar	94	5	89	1272	35	1237	14	7	14
21	Orkhon	8	-	8	162	-	162	20	-	20
22	Govisumber	5	2	3	38	13	25	8	7	8
	Total	524	189	335	4776	1090	3686	9	6	11
	Rural	430	184	246	3504	1055	2449	8	6	10
	Urban	94	5	89	1272	35	1237	14	7	14

**[Table IV-5] Number of students per computer, June 2004 (MoECS, 2004)**

	Aimags	Number of students	Number of VIII-X grade students	Number of computers (above PC-486)	Number of students per computer	Number of VIII-X grade students per computer
1	Arkhangai	19013	4010	176	108	23
2	Bayan-Ulgii	20226	4427	191	106	23
3	Bayankhongor	18479	3840	154	120	25
4	Bulgan	12439	3048	141	88	22
5	Govi-Altai	12363	2780	184	67	15
6	Domogovi	11095	2473	137	81	18
7	Domod	16610	4285	178	93	24
8	Dundgovi	10112	2191	138	73	16
9	Zavkhan	17701	4169	208	85	20
10	Uvurkhangai	21160	4387	192	110	23
11	Umnugovi	10300	2275	124	83	18
12	Sukhbaatar	11555	2639	108	107	24
13	Selenge	23049	5866	248	93	24
14	Tuv	19572	4463	206	95	22
15	Uvs	18814	3724	205	92	18
16	Khovd	20055	4644	158	127	29
17	Khuvsgul	25149	5397	196	128	28
18	Khentii	14060	2939	165	85	18
19	Darhan-Uul	20215	5024	195	104	26
20	Ulaanbaatar	169741	43339	1272	133	34
21	Orkhon	20446	5065	162	126	31
22	Govisumber	2987	696	38	79	18
	Total	515141	121681	4776	108	25
	Aimags	345400	78342	3504	99	22
	Ulaanbaatar	169741	43339	1272	133	34

[Table IV-6] Analysis of data Collectors and Users

Level of Government  Function	MoECS Department of Primary and Secondary Education		MoECS Department of Public Administration		MoECS Department of Information, Monitoring and Evaluation		Ministry of Finance		National Statistics Office		Local Government (Aimag)		School	
	C	U	C	U	C	U	C	U	C	U	C	U	C	U
Produced /Used														
Personnel schools (Teachers, non-teaching)		X		X	X	X		X	X	X	X	X	X	X
Asset, infrastructure, Facilities		X		X	X	X	X	X	X	X	X	X	X	X
Pupils (Enrolments, attendance)	X	X		X	X	X		X	X	X	X	X	X	X
Pupils performance	X	X		X	X	X		X	X	X	X	X	X	X
Demographic (population)		X		X		X		X	X	X	X	X		X
Geographic (school location)		X		X	X	X		X	X	X	X	X		X
Textbook	X	X		X	X	X		X		X	X	X	X	X

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## **5. Uzbekistan<sup>20</sup>**

### **A. General Educational Issues and Challenges**

The Republic of Uzbekistan located in the heart of Central Asia, covers an area of 447,400 sq Km, 60% of which is arid steppe or desert. With 26 million inhabitants (in 2006), 50% under the age of 25 and a density of 51.4 persons per sq km, it is the most populous country in the region. Uzbeks form the largest ethnic group (75.5%) in the Republic; the remainder includes Russians (6.0%), Tajiks (4.8%), Kazakhs (4.1%), Tatars (1.6%) and other ethnic groups. Almost 62% of the population lived in rural areas. Being a multi-cultural country, it can reap great potential advantages from its pluralism.

Following independence in August 1991, after the disintegration of the Soviet Union, Uzbekistan is in a process of transition from a centralized planning system to a democratic society and an open market economy. This transition is taking place gradually in order to allow the Government to maintain political stability and the social acquisitions of the previous system.

Uzbekistan is one of only a few developing countries with practically universal literacy of population. The high level of education of the population is one of the greatest achievements of the country. According to UN estimate, the level of literacy among the adult population, using the summary indicator of the number of those attending an educational establishment at any level, Uzbekistan has an above-average level, not only in comparison with countries with an average level of development, but also in comparison with developed countries. During the years of independence and implementation of economic reforms, the literacy level of the population in Uzbekistan increased from 97.7% (1991) to 99.3% in 2003. The share of the adult population with specialized secondary, vocational or higher education exceeds 75%. The problem of ensuring basic education for the 7-15 year age group has been practically resolved. There is practically no difference between the number of girls and boys, enrolled in primary education (90.9% of boys and 90.5% of girls).

Since independence in 1991 the Government has taken numerous measures aimed at transforming the education system in order not only to adapt it to the new social and economic environment, but also to change it into a dynamic factor for the country's structural development process. Many measures were taken on an ad-hoc basis, under the pressure of circumstances and with little

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<sup>20</sup> This paper was presented by Mr. Komiljon Karimov, Education Programme Officer, UNESCO Tashkent, Dr. Alisher Tuychiev, Head of Secretariat, Ministry of Public Education and Mr. Shukhrat Abdullayev, Director, FAKT Agency at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

possibility to base them on thorough, modern analysis. This has carried the risk of achieving low impact whilst relatively large amounts of resources are being used up. Also, it has become clear, that proliferation of reform measures is not a substitute for well prepared reform and an efficient and effective reform process. National authorities are now keenly aware of the need for such reform.

The uninterrupted political commitment of both the FSU and the independent Republic of Uzbekistan to support and adequately finance education has resulted in considerable achievements in terms of the population's access to and participation in education. The labor force is well educated and qualified: 82% of workers have completed basic education, of whom 34% have completed senior secondary or higher education.

The Government has drawn up a strategy for the reform of education and training and for the long term development of the sector. The strategy is called "National Programme for Personnel Training" (NPPT). The strategy (a) provides a coherent framework for the transition and transformation decisions taken since 1991, and (b) formulates objectives for sector reform and development. The National Programme was approved by Parliament in August 1997.

The main objective of the National program for personnel training and The Law of the Republic of Uzbekistan "On education" is to improve the quality of education across all levels and transfer to free compulsory 12-year education.

The formal education system is divided into **pre-primary**, **basic** (4 years at primary level and 5 years at middle level), **specialized secondary** (3 years for both general and vocational/specialized), and **higher education** which is imparted in universities and various types of institutes. The legal age of enrollment in primary schools is 6.

Education in Uzbekistan falls under the direct responsibility of either the Ministry of Public Education (MPE) or the Ministry of Higher and Technical Education (MHE). **MPE** oversees pre-school, primary, middle, secondary, special and out-of-school education, while **MHE** is responsible for secondary specialized/technical and higher education.

Besides the formal educational institutions, a network of special training institutions run by different administrative bodies cater to extra-curricular activities in a wide range of fields: technical training, tourism, regional studies, ecology, biology and sports.

The education of children from ethnic and linguistic minorities is an important policy issue. So far, the Government has maintained its political commitment to provide basic education in the seven national languages, including Uzbek. At



present, over 10% of schools in Uzbekistan provide instruction in the languages of ethnic minorities (Russian, Kazakh, Tajik, Karakalpak, Turkmen, and Kyrgyz), accounting for about 15% of total enrolments in basic education.

The education reform process in Uzbekistan can be divided into five principle phases: (i) the policy decision to undertake a radical reform; (ii) the design of the reform strategy [i.e.the NPPT]; (iii) the elaboration of implementation action programmes; (iv) implementation of reform activities; and (v) monitoring of reform progress and review and revision of reform actions.

The three principal Programmes capture the complex interrelationship and mutual dependence and support between (i) education and training which must serve the economy and society instead of slowing down socio-economic progress, and (ii) the economy and society, which must support, and not block, the transformation and development of education and training.

Since independence and despite tight budgetary conditions, the education sector has accounted for roughly 8% of GDP, a high level by international standards, indicating a substantial effort to support education. The share of education in total public recurrent expenditures has remained at or above 21% since 1995. Almost 90% of total education expenditure comes from the central (Republican) budget and the remaining 10% is financed through tax revenues generated by local governments.

### ***Major issues to be addressed within the education system***

In conformity with goals and objectives of NPPT , the following measures for ensuring quality education are envisaged.

#### ***In pre-school education:***

- *Increase enrolment rates for state pre-school institutions through strengthening support to families with children of pre-school age; increase enrolment at non-traditional pre-school education institutions; expansion of “kindergarten-school” units, home-based and non-state kindergartens and different groups with short timetables;*
- *Improve the professional level of teachers by improving the system of training, retraining and in-service training;*
- *Continuing the implementation of the Complex program “Children of the third millennium” aimed at preparing children for school, and improvement of the level of scientific-methodological basis for teaching and educational process at pre-school education institutions;*
- *Designing a complex of measures for organization of production of didactic materials and toys, which help to develop basic skills, logic and meet children’s needs and interests.*

*In basic education:*

The main priorities of further reforming are:

- Strengthening and development of material-technical basis of schools;
- Provision of schools with modern learning and laboratory equipment, computers and ICT, textbooks and instruction materials;
- Improving learning standards and syllabi;
- Provision of general secondary schools with good quality teaching staff, particularly in rural areas, and provision of appropriate incentives for teachers;
- Developing sports and improving sports facilities in general secondary schools.

The main sources of financing of the abovementioned program, along with budgetary funds, shall be resources of organizations and companies, sponsors, foreign loans and grants. In order to encourage fund raising and their appropriate use, a special extra-budgetary fund for school education was created.

With the purpose of efficient use of financial resources, improvement of quality of education and ensuring social equity, implementation of financing on average per capita (per one student) principle is planned.

*In secondary specialized and vocational education:*

- *Improving the quality of professional guidance* through development of activities in the area of career guidance for young people, taking into consideration the current mismatch between supply and demand in skills, qualifications, territorial, gender, age and other factors; improving the system of monitoring of job placement and settling of graduates at their place of work;
- *Improving the teaching content and production facilities* through enhancing cooperation and integration between vocational colleges, higher education institutions and enterprises;
- *Increasing effectiveness and quality of learning process* through designing and implementing teaching norms as well as provision of teaching materials;
- *Developing an effective system of quality control of staff training*, and accreditation of educational institutions on the basis of improved normative-legal framework.

*In extra-curricular activities:*

- *Strengthening the material-technical basis of extra-curricular activities and extending the network of extra-curricular institutions;*

- *Integration of basic education and extra-curricular activities* through creation of regional complexes “school + extra-curricular institutions” and establishing the appropriate normative-legal framework for operation of such complexes;
- *Improving staff levels and training for staff* at extra-curricular institutions, and also material incentives;
- *Strengthening the role of family and makhalla* in bringing up a healthy generation.

*The main objectives of the adopted programs are the state guarantee of access to and equal opportunities to obtain education at all levels as well as increasing the quality of education.*

With the aim of accomplishment of these objectives, the following resolutions were adopted in the area of education:

«On the National state program for the development of school education for 2004-2009” (Decree of the president of the Republic of Uzbekistan №YII -3431 of 21.05.2004) ;

«On measures for improving the system of training pedagogic specialists for secondary specialized vocational education institutions” (Resolution of the Cabinet of Ministers №400 of 04.10.2004);

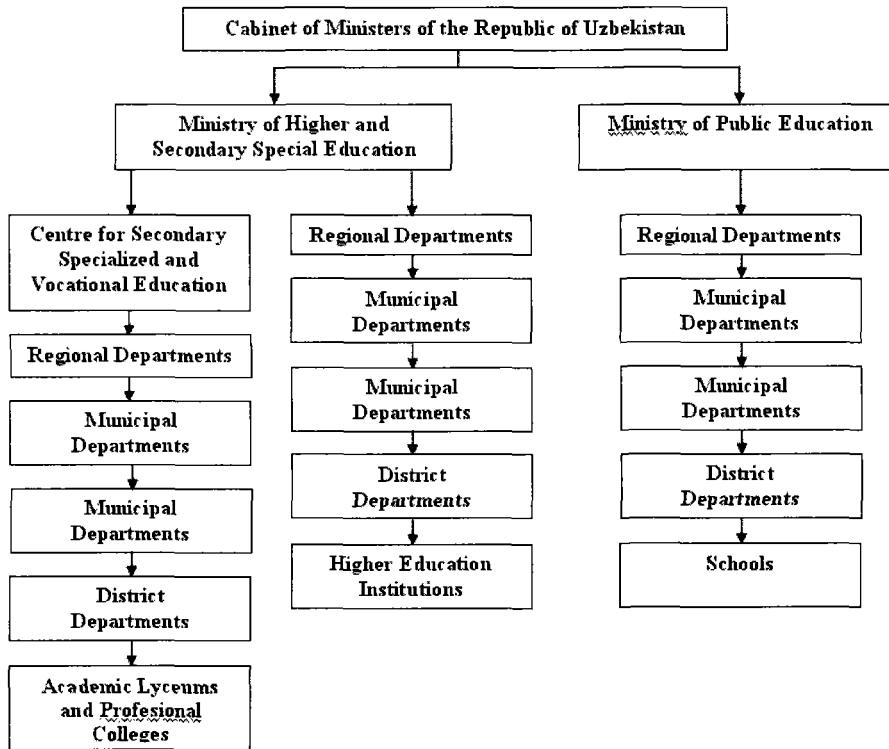
«On the Program of equipping general secondary schools with furniture, modern learning and laboratory equipment, computers and sports equipment for 2005-2009” (Resolution of the Cabinet of Ministers №493 of 21.10.2004);

«On the Program for publication of text-books and educational-methodological guidelines for secondary schools for 2005-2009” (Resolution of the Cabinet of Ministers №548 of 22.11.2004).

Another problem which yet to be addressed is lack of accurate and sufficient education data. In present, official education statistics are derived from the State Department for Statistic which is the government agency responsible for preparing and releasing official education statistics, while other central agencies, including Ministry of Public Education, Ministry of Higher Education, Ministry of Finance and Ministry of Labour, maintain their own data collection and processing systems, often for internal use only. Therefore, the existing information systems have been reported as fragmented, and the statistics produced often lack consistency and relevance to policy.

**Improving the Relevance of Education:** The extent to which knowledge, attitudes, and skills imparted by the education and training system are mastered by learners and contribute to a country’s economic development is largely dependent on the available teaching materials. There is a need for quality improvement, especially for revision of curricula and textbook content. The low quality and insufficient relevance of the majority of textbooks is a remnant of outdated curricula, noninteractive teaching methods, and poor quality

instructional materials. Emphasis must be given to problem-solving ability and creativity, and to the acquisition of broad-based skills that leads to employability and flexibility. Equal efforts should be directed toward the training of curriculum specialists and textbook writers; the majority of them have never been exposed to student-centered approaches to teaching, or possess international experience in curriculum reforms.



[Figure IV-3] Structure of education system administration in Uzbekistan

## B. The Use of ICT in Education Sector

The use of ICTs in and for education is rapidly expanding in many countries, and is now seen worldwide as both a necessity and an opportunity. The Dakar Framework for Action (April 2000) identified the use of new information and communication technologies as one of the main strategies for achieving the EFA (Education for All) goals.

In 2002 the importance of developing Information and Communication Technologies (ICTs) and using ICTs for development of the country reached the momentum and this issue became a “national priority” by special decree of

the President of the Republic of Uzbekistan and the resolution of the Cabinet of Ministers of the Republic of Uzbekistan. The ICT Council, created in this year as the highest government body in ICT, advances improvements of the regulatory framework to enable favourable conditions for sector development and better utilization of ICT advantages. Improvement of infrastructure for more universal Internet connectivity continues with a steady pace. Public and private supported initiatives contribute to creation and enrichment of Information Resources. Still placing importance on technical aspects of ICT improvement, the Government increasingly shifts its emphasis at a wider usage of ICT for development purposes.

According to the national strategy for ICT development introduced in 2002, basic education is a priority area for the development of information and communications technology (ICT).<sup>1</sup> In 2004 only 18% of general secondary schools had access to modern personal computers and just 50% of schools had access to any form of computers including those made in the Soviet era. Within the framework of the National Program for Basic Education Development, the Government has launched a program to integrate ICT in basic education, with the provision of a 14+1 computer suite to every school in the country by 2009 and of internet connectivity to 35% of schools. (Cabinet of Ministers, Uzbekistan. Resolution 30 May 2002. On Further Development of Computerization and Introduction of Information and Communication Technologies).

It is in this context that the important government decisions were made since 2004 to improve technical infrastructure and financial state of educational institutions, and sources identified for funding of the activities listed in these decisions. Uzbekistan Agency for Communication and Information of Uzbekistan (UZACI) is implementing the activities for creation of National information and search engine and generation of socially and culturally oriented information resources. Ministry of Higher and Secondary Special Education (MHSSE) is forming a corporate network that enables connecting all Higher Education institutions (HEI) of the country into single information system. Ministry of Public Education (MPE) is implementing a sectoral Programme for creation of computer classes in secondary schools. Due to these measures as well as concentration of efforts of international organizations in ICT development for enhancement of country's human capacity, indications of ICT in education have been significantly improved.

A number of government resolutions were adopted in 2004 for development of school education, which includes equipping the secondary schools with adequate technical infrastructure. The Decree of the President of the Republic of Uzbekistan #UP-3431 "On State Nationwide Programme for School Education Development in 2004-2009" was issued on May 21, 2004, where procurement of modern academic and laboratory equipment, computer

equipment, textbooks, and academic materials for the schools was identified as one of the focal areas. In the period of implementation of State Nationwide Programme for School Education Development in 2004-2009, all companies and organizations, including those with special status of taxation, will be subject to mandatory contribution in the amount of 1% of their income for school education development starting January 1, 2005<sup>12</sup>. Introduced mandatory contributions for development are equated to state taxes and dues. Programme for procurement of computer equipment for secondary schools for 2005-2009 is envisioned to cover 8,633 schools.

Changes in ICT accessibility for schools in 2004-2005 were tracked by four major indicators displayed in the following table (see Table 1). As illustrated in the table, almost all indicators display the trend for improvement of corresponding indicators of availability of computer equipment for school pupils. For instance, in comparison with the previous year, indicator of the number of pupils per 1 computer was improved by 25%.

**[Table IV-7] Indicators of School Access to ICT**

Indicators	Number		
	May 2003	July 2004	January 2006
Number of students at secondary schools per 1 computer*	477 (107.6)	434 (98.8)	324,4 (90.2)
Number of students at secondary schools per 1 computer classroom	4766	4344	3394,5
Number of secondary schools per 1 computer classroom	7.7	6.8	5.6
Number of computers in secondary schools connected by LAN	22191	23928	32744
Share of secondary schools with Internet access (%)	1.2	1.5	1.7

\* in estimating the number of basic educational school students per 1 computer only modern computer classrooms were taken into account (Pentium II and above). Indicators taking into account computer classes equipped with Pravets, Agat and other computers are given in brackets.

(Source: REVIEW OF ICT DEVELOPMENT IN UZBEKISTAN FOR 2005 Copyright © 2006 UNDP ICTP Project)

Another positive trend observed in 2000-2005: reduction in the number of students of secondary schools per 1 computer classroom. While the number of pupils per 1 computer classroom was in 2000, this indicator fell by 34.4%, reaching the figure of 3,395 in early 2006. Meanwhile, it is notable that the number of computer classrooms equipped with modern computers (Pentium II and above) accounts for only 25.4% of total number of computer classrooms. In

this regard, inventory taking and disposal of old computers are underway, along with the measures to raise preferential loans and grants of foreign banks.

In order to achieve more dynamic and qualitative changes to procure new computer equipment for secondary schools, 988 schools were equipped with computers in 2005 in the framework of State Nationwide Programme for School Education Development.

Furthermore, Ministry of Public Education of Uzbekistan has reached an agreement with CNTIC IBC, a Chinese company to procure 2,000 computer classroom sets for country's schools. USD 20 mln. are being disbursed for implementation of this project, of which USD 1 mln. is being disbursed as a grant of the Chinese government, and USD 19 mln. is being provided as preferential loan.

In October 2005 Asian Development Bank approved the decision to provide USD 30 mln. in preferential loan in the framework of the "Introduction of Information and Communication Technologies in Secondary Schools" in 2006-2010. In the framework of this project, school clusters encompassing all schools will be established and 860 schools will be created as the leading cluster schools, which will provide support to other schools in its cluster in the process of ICT integration into all aspects of teaching and learning. It is planned that every cluster will on average unite 15 adjacent schools. Leading cluster schools will be equipped with computer equipment with Intranet and Internet access<sup>14</sup>. As of 1 January, 2006, share of secondary schools with LAN accounted for 43.1% of total number of schools against the figure of 41.9% in 2004, while only 1.7% of schools have Internet access.

**[Table IV -8] Summary of the indicators in improvement of the quality of education based on ICT utilization studied in this report.**

<b>Indicators</b>	<b>May, 2003</b>	<b>July, 2004</b>	<b>Oct., 2005</b>	<b>Jan., 2006</b>
Share of academic institutions having websites (%)	0.75	1.03	1.41	1.41
Share of disciplines taught with use of ICT among total number of disciplines (%)	-	13	14.4	14.4
Share of teachers - users of distance education (%)	-	0.7	0.9	0.9
Share of academic institutions using computer testing	-	25.2	28.5	28.5

Source: REVIEW OF ICT DEVELOPMENT IN UZBEKISTAN FOR 2005 Copyright © 2006 UNDP ICTP Project

Currently efforts are being made to introduce information technologies into education in Uzbekistan. Following two websites were launched in 2005: [www.ilm.uz](http://www.ilm.uz) and [www.examen.uz](http://www.examen.uz), which provide opportunities for preparation of university applicants to admission exams at HEIs and other academic institutions, testing and enhancement of the knowledge, preparation for attestation of teachers, managers and other staff. Legislative and regulatory framework related to educational sphere is also provided on these websites. According to Resolution #PP-91 of the President of the Republic of Uzbekistan issued on 28.09.2005 “On establishment of Public Educational Information Network of Uzbekistan”, educational and youth information resources created in the data networks by various institutions of Uzbekistan will be united into single Ziyonet information network. Need for establishment of Ziyonet network emerged due to the lack of single information network, which would systematize educational and youth-oriented information.

It is expected that all schools, academic high schools, colleges, higher educational institutions, youth organizations, libraries, museums, and other educational and cultural institutions of the country will be connected to international data networks including Internet via Ziyonet network, and indicators of ICT in educational process will be improved in the process.

**Teachers and ICT Use.** Experience shows that teachers are a key to the success of ICT use in schools. To date, a large majority of general secondary teachers in Uzbekistan have never used a computer for any purpose. This is partly because of the policy of computer use only for the subject of informatics, and partly due to the lack of computers in schools. To turn teachers into champions of ICT use and a prime source of support for students, they themselves must first be familiar and comfortable with the technology, and become ICT adept in their own subject areas. This would require quality training of most of the 450,000 teachers within a relatively short time. The current in-service teacher training (INSETT) system would need significant improvement to fulfil this task.

To provide effective support for ICT use, the existing INSETT system will need to be transformed to one that is closer to teachers, offers more frequent training (on a weekly or monthly basis), and acts as a center for interacting networks among teachers and schools. On the incentive side, the Government introduced a performance-based remuneration system in 2003, and teachers’ salaries have increased substantially. Qualification for ICT use in subject areas and general management will need to be incorporated in the incentive system.

**Learning Materials and ICT Use.** Appropriate and adequate learning materials are a key condition for successful application of ICT in schools. At present, such materials are not available, and capacity is not adequate for developing such materials. The Government has made it a priority to develop e-



textbooks. However, considerable efforts are needed to build this capacity, which is basically nonexistent. In developing these learning materials, wide participation must be encouraged, since this will require new concepts, skills, and talents that are not traditionally found in education circles. ICT will have a significant impact on the provision of learning and teaching materials in other local languages of instruction (LOI) because developing alternative language versions of materials in electronic form is much easier and cheaper than in print form. ICT will make the provision of local language materials more cost effective, make materials more accessible to students with other LOIs, and have a positive impact on the quality of their learning.

Based on the above Government of Uzbekistan has recently introduced a new draft long-term *NATIONAL STRATEGY OF THE ICT INTRODUCTION INTO GENERAL EDUCATIONAL PROCESS*

The main objective of the strategy is to *determine of the strategic directions of the effective and sustainable development of ICT into general education.*

*The main goals are:*

- to provide the conformity of this strategy to the national priorities in the informatization field;
- to work out effective approaches on the ICT introduction into schools;
- to ensure the correspondence of the informatization processes to the educational aims and tasks;
- to build capacities of teachers and other school personnel on the use of ICTs in education process;

The strategy has two stages:

#### **First stage (2006-2010)**

The main goals and tasks of the first stage:

- to improve the quality and results of the training of some subjects on priority fields like mathematics, informatics, natural and social sciences, philology including into the curriculum of the 5-9 forms by the means of ICT using;
- to prepare to the perspective extension of ICT onto the next phases by the way of creation favorable conditions for using ICT in educational process by the means of stable financing, and creation necessary infrastructure for it.

#### **Second stage (2010-2015)**

The main goals and tasks of the first stage:

- to improve the quality and results of the training of all subjects including into curriculum of the 5-9 forms by the means of ICT using;

- to train of all pupils to the basic knowledge of ICT and their means using during the training of the priority subjects from 1 till 9 grades.

According to the order of the Minister of public education dated 03.08.2006, 2006-2007 academic year named «The year of raising the teachers qualification on Information Communication Technology».

According to the order № 265 of the minister of public education dated 29.10.2006 in all regions of the republic was held the short-term courses on computer literacy with the help of which the number of teachers owning an initial level of the computer literacy has been increased with 90490 up to 183937 person.

Nowadays the average indices of the initial level of the computer literacy among the teachers are 40,9%.

According to the Decree №110 of the Cabinet of the Ministers of the Republic of Uzbekistan dated 07.06.2006 under the Ministry of Public Education was created the Center of development of multimedia general educational program.

### **C. The Use of ICT in Education Planning and Management**

Recent reviews and researches in the field of ICT in education show that the use of Information and communication technologies in education planning and management in Uzbekistan is at the initial stage of development. So far, most of the efforts are being made to collect raw education data for planning purposes using ICT tools such as EMIS software developed in cooperation between the Ministry of Public Education, UNICEF, UNESCO and the FAKT Research agency.

Within the above mentioned project efforts made to train staff from the MPE and local departments of education responsible for data collection on how to use EMIS as a tool to collect and analyze data for planning purposes.

Another positive achievement is that MPE has established a local network which connects all Ministry staff and its local departments, and this helps to timely deliver any information within the system.

Despite these efforts a little progress achieved in using ICT in education planning and management.

Integrating ICT in schools is a key strategy of the Government to achieve its education subsector objective of improving the quality and relevance of basic education, and to ensure equal access to all. Full integration of ICT in basic education will require an ICT-based planning and management system. At

present, Uzbekistan has embarked on the initial phase to providing full ICT integration in schools.

Cognizant of the tasks and the need to overcome considerable constraints, the Government has developed a draft strategy with ADB assistance to guide medium- and long-term implementation of its ICT in basic education program.

As mentioned above the draft strategy focuses on long-term ICT development in basic education that will be financially sustainable and educationally effective, and pro-poor. To achieve this, the strategy proposes a phased approach, with the first phase in 2006–2010 and the second in 2011–2015.

This approach prioritizes the limited resources available during the first phase to build a firm foundation for the long-term integration of ICT in basic education, which will include the use of ICT tools such as EMIS for educational planning and management.

In order to achieve this the following issues need to be resolved:

- Insufficient and out-dated physical ICT infrastructure;
- Insufficiently trained staff of the Ministry and its local departments in the use of ICT for educational planning and management;
- Lack of understanding of the importance and benefits of use of ICT for educational planning and management among the Ministry's staff and its local departments.

#### **D. EMIS in Uzbekistan**

Education Management Information System (EMIS) could be considered as one of the important tools for better education sector planning, management and monitoring of education systems, and which can provide a systematic approach for data collection, processing and analysis.

In present, in Uzbekistan official education statistics are derived from the State Department for Statistic which is the government agency responsible for preparing and releasing official education statistics, while other central agencies, including Ministry of Public Education, Ministry of Higher Education, Ministry of Finance and Ministry of Labour, maintain their own data collection and processing systems, often for internal use only. Therefore, the existing information systems have been reported as fragmented, and the statistics produced often lack consistency and relevance to policy.

The Ministry of Public Education (MoPE) has five key departments responsible for use and collection of data. These include the departments of school management, personnel, monitoring, accounting and administration. The Department of Monitoring collects data on all aspects of education including

infrastructure, pupil and personnel data for the primary purpose of monitoring learning achievement. The personnel department collects information on MoPE administrative staff and school level staff. The other departments collect information on areas of specific interest such as asset, financial, and textbook information. Data appears not to be well distributed between departments. It is not uncommon for different departments to collect and use identical data. There is no unified system and no single source for all education data.

The primary objective of the Department of Monitoring is to analyse, advise and report on learning achievement. In order to fulfil its function it is required to analyse data on all aspects of education at the school level including access to facilities and pedagogical materials, teacher capacity and pupil data including. The Department of Monitoring has therefore been given responsibility for SMIS/EMIS development.

The Department of Monitoring is currently undergoing a transition from its current systems to a newly developed system. The current system of data collection is paper based at the school level. In 2003, UNESCO published a document entitled "Information tools for the preparation and monitoring of education plans", which describes different aspects of national EMIS development. In Uzbekistan, data is collected and entered using paper forms at the school. This is performed by a person at the school level who is employed through the Department of Monitoring and who is dedicated to monitoring. The person dedicated to monitoring at the school level sometimes performs control tests for the Unit of Monitoring with the objective of monitoring student evaluations performed by teachers. Where there are repeat discrepancies the head of school is interviewed with the teachers responsible to determine reasons and solutions to the problems.

EMIS/SMIS development has taken place and is taking place under several key programs. Most notably through a UNICEF funded project to develop an SMIS to facilitate school management, teacher / pupil monitoring and assessment and other functions performed at the school level as well as more recent UNESCO project for capacity building of Ministry of Public Education's staff in data collection and informed decision making..

UNICEF is assisting the Department of Monitoring by funding the NGO FACT to develop the SMIS software and to equip the forty pilot schools with adequate hardware to operate the system and to train pilot and central staff in the operation of the system. The project is being funded under the Child-Enrichment Program (2000-2004 – extended to 2007). The program is designed for children 6-12 years of age. The program aims to maintain high enrolment rates and low drop-out rates, as well as to improve the quality of education through introducing interactive teaching/learning methods and promoting community involvement in education, the teaching of life skills in

health and nutrition, hygiene and CRC, and assisting in the establishment of EMIS.

Within the framework of UNESCO/Republic of Korea FIT Project 526INT1003 “Supporting the review and reformulation of national EFA plans” UNESCO has provided assistance to the Ministry of Public Education of Uzbekistan in revising its policies on Educational Planning, Financing and Management. Special emphasis in this activity is given to developing and strengthening the EMIS.

For this purpose a number of technical workshops were organized where high level officials from the Ministries of Education, Finance, Statistics and Planning have received intensive training in the use of modern application tools for planning and management. The workshops were facilitated by UNESCO HQ and internationally hired consultants.

Also, within the project activities, three officials of the MoPE has visited the Republic of Korea and had the opportunity to visit such institutions as Ministry of Education, Korean Education Development Institute (KEDI), Centre for Educational Statistics and Information (CESI) and KERIS.

Within this project a special training manual on Education Planning, Financing and Management has been developed in local language.

Nonetheless there are several key issues that are apparent with the current system including:

- Duplication of data collection efforts resulting in wastage of resources and confusion as to which data is accurate.
- An apparent culture of information hoarding leading agencies and government departments to report difficulties in obtaining education data.
- No overall strategy of EMIS development is evident. There is no vision of EMIS development at the regional and district level other than to use the SMIS at the school level to obtain data.
- Information is gathered extensively but not extensively utilised particularly for policy development and high level planning. There appears to be a low level of understanding of how education data can be used to affect education planning and policy development.

Further development of EMIS should help to improve education system planning and will help to address challenges such as declining enrolment and gender disparities by further development of EMIS which would lead to a more systemized and accurate data collection and analysis.

## **E. Use of ICTs in Education: Lessons Learned**

While analyzing recent projects on the use of ICTs in education the below mentioned issues can be stated.

1. There is a need to evaluate the ICT readiness of policy makers, education planners and managers, teacher educators and teachers, identify the educational needs for using ICT in Uzbekistan.
2. Uzbekistan has energetic marketing system, relatively sufficient education budget, and gradually decentralized education system. Infrastructure and sustainable funds will not be the major issues for Uzbekistan. Instead, how to harness the potential of rapidly developing ICT for education will be an urgent challenge for policy makers.
3. It is necessary to use overarching strategies to leverage local and school-based potentials.
4. It's the right historic moment for Uzbekistan to develop ICT standards for teachers, and if possible, also for students. Standard is one of the most important components in national ICT-in-education policy and also an overarching guidance for follow-up activities, including ICT curriculum development, ICT teacher education, and practices of ICT in the teaching and learning process.
5. There is a need to organize an ICT-in-education Manager Forum which shall focus on building leadership and management of education managers (EMIS/SMIS may be the focus).
6. Encourage and empower schools and teachers in minority areas to use Free and Open Source Software (FOSS) to design and deliver local-language-based teaching and learning materials. Wiki is recommended to be introduced to local teachers, cooperation in local content development should be facilitated.
7. There is a need to prioritize the goal of using ICT to support local-language content design and ensure girl's participation in ICT using.
8. Gender balance concept in ICT policies, curriculum standards and other related materials should be evaluated.

## **F. Areas for Technical Assistance**

The technical assistance from UNESCO and other donors are believed to be needed in the following areas:

### ***1) Improvement of the use of ICTs as a tool for a better education sector planning, management and monitoring of education systems;***

The main focus here should be concentrated on the further refining of EMIS tools and training of education system staff in more effective data collection, analyses and use for policy formulation, planning and management.

***2) Effective use of ICTs as a tool for the delivery of educational content and services;***

Assistance required in national capacity development in the use of ICTs as an efficient and effective tool for the delivery of educational services in Uzbekistan. Support needed for developing feasible and sustainable programmes and mechanisms for improving teaching and learning processes by means of ICT, as well as for designing appropriate educational contents and software tools for its delivery to different users of the national education systems.

Particular attention shall be on ICT standards development: It's the right historic moment for Uzbekistan to develop ICT standards for teachers, and if possible, also for students. Standard is one of the most important components in national ICT-in-education policy and also an overarching guidance for follow-up activities, including ICT curriculum development, ICT teacher education, and practices of ICT in the teaching and learning process.

There is also a need to evaluate the gender balance concept in ICT policies, curriculum standards, textbooks and materials. This should lead to provision of equal opportunities to access to information and technology and successful experience of using ICT in classrooms for girls.

[Table IV-9] Analysis of Data Collectors and Users

Level of Government Function	MoE Department of School Management		MoE Department Personnel		MoE Department of Monitoring		Ministry of Finance		Ministry of Statistics		Local Government		School	
Produced /Used	C	U	C	U	C	U	C	U	C	U	C	U	C	U
Personnel schools (Teachers , non-teaching)		X		X				X	X	X		X	X	X
Asset, infrastructure, Facilities		X			X	X	X	X	X	X	X	X	X	X
Pupils (Enrolments, attendance)		X		X	X	X	X	X	X	X	X	X	X	X
Pupils performance		X			X	X			X	X			X	X
Demographic (population)		X		X	X	X	X	X	X	X	X	X	X	X
Geographic (school location)		X		X	X	X	X	X	X	X	X			
Textbook		X			X	X	X	X	X	X	X	X	X	X

C=Collectors (producers, source, compiling), U= Users (recipients, analyzing)

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## **6. Kenya<sup>21</sup>**

### **A. General Education Issues and Challenges**

#### **1) Introduction**

The development of the education sector has been along standing objective of the Government of Kenya (GoK) with the ultimate goal of combating ignorance, disease and poverty. Since independence there have been not less than 5 education reforms initiatives whose objective was to improve on the strategies of education provision so as to address the changing development needs of the society. Since early 1990s enrolment in education has been hampered by cost of education and high poverty levels. Recent results show that the national absolute poverty declined from 52.3 percent in 1997 to 45.9 percent in 2006.

As an objective of enhancing access to primary education, in 2003 the NARC government introduced Free Primary Education. The result has been an influx of over 1.8 million more children into primary schools. However, with a Net Enrolment Rate (NER) of 86.5 percent, there is still a challenge in having all the children in school. The Kenya government policy is to achieve UPE and offer quality basic education in the context of its national and international commitments. This commitment is in line with the resolutions made during the World Conference on Education for All (EFA), held in Jomtien, Thailand in 1990. The emphasis stated in the Government blue print on “Economic Recovery Strategy for Wealth and Employment Creation 2003-2007 is that education is a key determinant of earnings, therefore an important exist route to poverty.

In tandem with the service charter, the Ministry undertakes to provide efficient and effective delivery of services in a timely manner; be accountable and transparent in our operations; use resources wisely; formulate policies that comply with needs of the entire education sector and; collect, process, analyse and disseminate education data<sup>22</sup>.

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<sup>21</sup> This paper was presented by Charles Obiero, Senior Economist/Statistician, EMIS IP Team Leader in Ministry of Education, Republic of Kenya at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

<sup>22</sup> MOE: Service Charter January 2007

The Ministry recognizes the critical role the education sector has towards embracing e-tracking of public resource utilization focusing on results based reporting. There would be no prudent planning without accurate and reliable statistics which is critical for policy decision making and planning towards effective management of the education sector.

In 2005 the Ministry adopted a sector wide approach (SWAP) in planning for prudent use of resources and coordinated implementation and hence achieve the Education For All (EFA) target by 2015. The five year sector wide plan, namely the Kenya Education Sector Support Programme (KESSP) has 23 strategic investment plans covering all the levels of education and functions. Mobilization of resources is from both the public and private sector including development partners. The primary objective of the KESSP interventions is increasing access at all levels of education and improving quality of education provision.

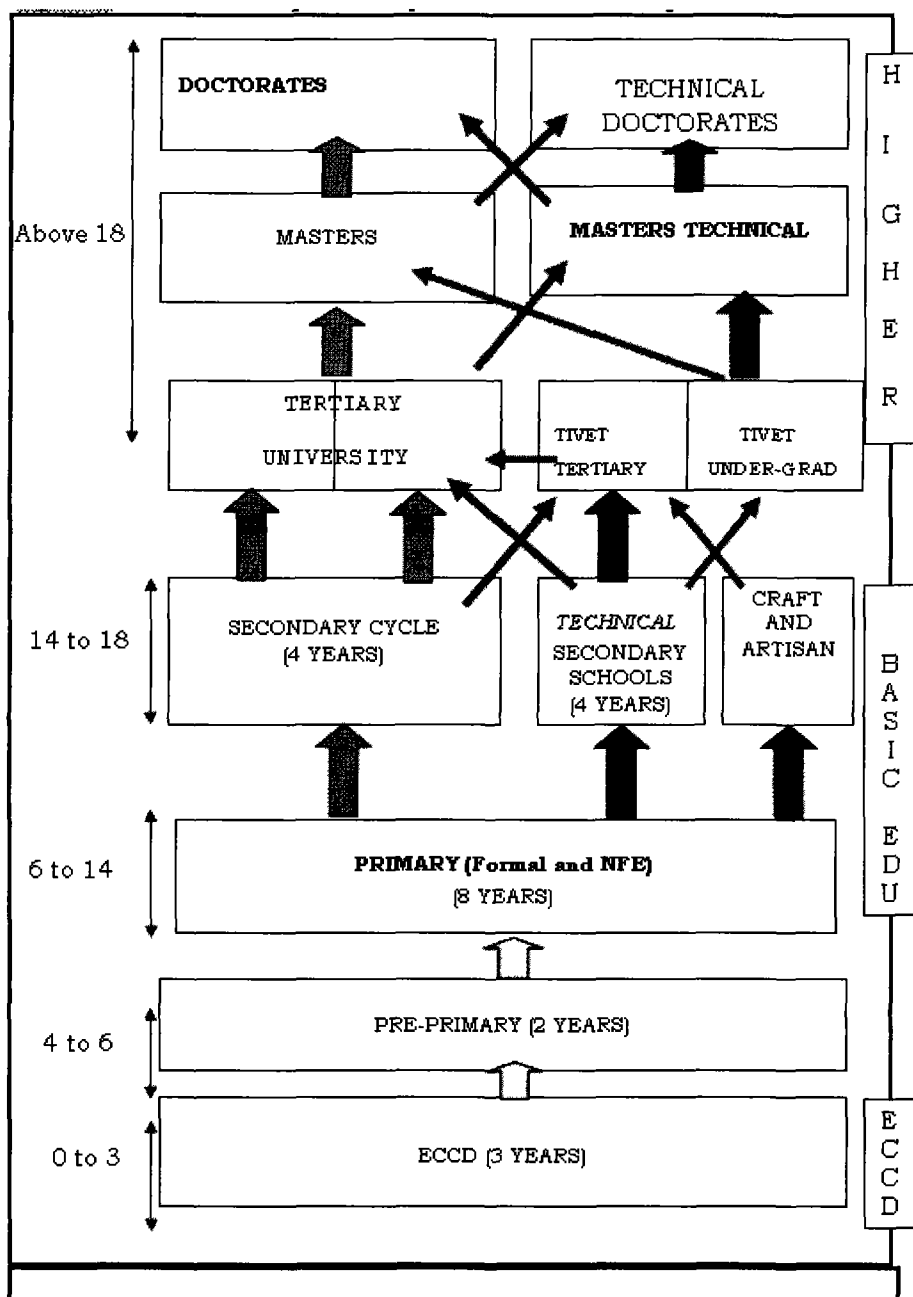
In order to monitor the implementation of the KESSP programme objectives, there are 2 investment programmes that are to support the measurement and tracking of progress in the interventions, namely; Education Management Information System(EMIS) and Monitoring and Evaluation investment programmes. The Ministry uses empirical evidence in planning and resource allocation. Hence, the need for establishment of a reliable data management system that addresses management concerns in planning and decision making has been critical. An efficient EMIS that provided reliable and accurate data will meet the management demand in education planning and management.

#### **a) Structure of education**

The current structure of education and training in Kenya comprises of the following:

- The ECDE, which covers early childhood care for 0-3 year-old children and pre-primary for 4-5 year-old children;
- Primary education which lasts 8 years and caters for 6-13 year-old children, leading to the Kenya Certificate of Primary Education (KCPE);
- Secondary education which lasts 4 years and caters for 14-17 year-olds, leading to the Kenya Certificate of Secondary Education (KCSE);
- TIVET, which includes trade test courses in Youth Polytechnics, artisan, craft and diploma courses in technical training institutes and institutes of technology, craft and diploma courses in national polytechnics;
- Business and professional studies in middle level colleges that provide certificates and diplomas; and

- University education lasting a minimum of 4 years depending on the degree pursued, leads to a bachelor's degree and post-graduate training programmes leading to masters and doctorate degrees.



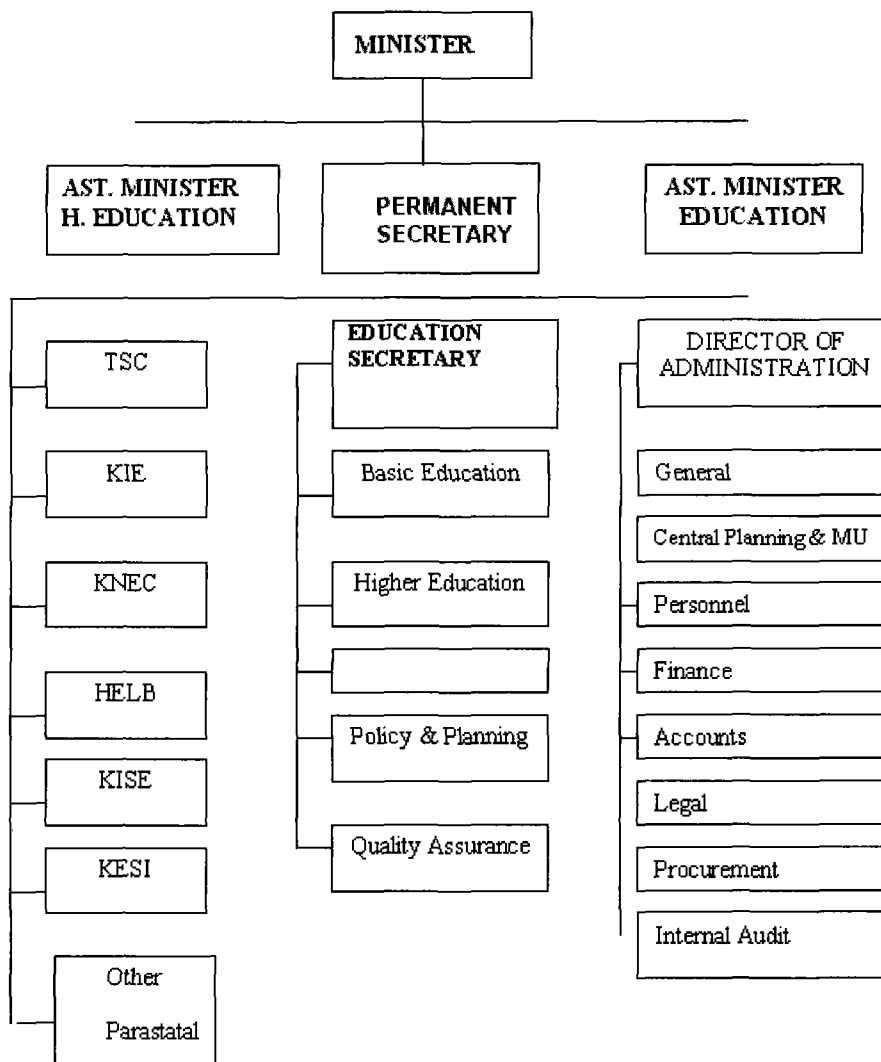
[Figure IV-4] Structure and Organization of Education and Training

The Ministry of Education is responsible for the provision of education, training, research, policy planning and implementation. It consists of four directorates, support departments and parastatals. The education directorates are: Directorate of Policy and Planning, Directorate of Higher Education, Directorate of Basic Education and Directorate of Quality Assurance and Standards.

The functions and mandate of the ministry include: quality assurance of education institutions, teacher education and management, schools administration and programmes, registration of education and training institutions; curriculum development; examinations and certification and provision school equipment. In addition, the Ministry is in-charge of the daily administration and management of the Early Childhood Education, Care and Development (ECDE), primary education secondary education, special education, university education and continuing education sub-sectors.

The following parastatals that fall under mandate of the sector: Teachers Service Commission (TSC); Kenya Institute of Education (KIE), Kenya National Examinations Council (KNEC); Science Equipment Production Unit (SEPU), Commission for Higher Education (CHE); Higher Education Loans Board (HELB); Kenya Education Staff Institute (KESI); United Nations Educational, Scientific and Cultural Organizations (UNESCO), Jomo Kenya Foundation (JKF); Kenya Literature Bureau (KLB); and Centre for Mathematics, Science and Technology in Africa (CEMASTEA).

The other areas of education on TIVET are under the Ministry of Science and Technology (MoST). The Ministry has the Directorate of Technical Education which oversees the TIVET training in the technical training institutes, institutes of technology and national polytechnics. The Department of Research and the National Council for Science and Technology (NCST) are also under MoST.



**[Figure IV-5] Ministry of Education Organizational Structure**

### c) Situation analysis

Kenya has achieved an impressive increase in a number of learning institutions, training of teachers, curriculum reforms and an increased participation by groups, which previously had little or no access to schooling, especially enrolment by gender. Since independence in 1963, the number of students enrolled at various levels of education has substantially increased.

**[Table IV-10] Number of Educational Institutions, 2002 – 2006**

					Numbers
Category	2002	2003	2004	2005	2006
Pre-Primary	28,279	29,455	31,879	32,043	33,121
<b>Primary</b>					
Public	17,683	17,697	17,804	17,807	17,946
Private	1,441	1,857	1,839	1,946	2,283
<b>Sub Total</b>	<b>19,124</b>	<b>19,554</b>	<b>19,643</b>	<b>19,753</b>	<b>20,229</b>
<b>Secondary:</b>					
Public	3,247	3,583	3,552	3,621	3,646
Private	440	490	490	573	569
<b>Sub Total</b>	<b>3,687</b>	<b>3,999</b>	<b>4,073</b>	<b>4,197</b>	<b>4,215</b>
<b>Training Colleges</b>					
Pre primary					
Primary	29	29	30	30	30
Secondary	3	3	3	3	3
<b>Sub Total</b>	<b>32</b>	<b>32</b>	<b>33</b>	<b>33</b>	<b>33</b>
<b>Universities</b>					
Public	6	6	7	7	7
Private	13	17	17	17	17
<b>Sub Total</b>	<b>19</b>	<b>23</b>	<b>24</b>	<b>24</b>	<b>24</b>
<b>TOTAL</b>	<b>51,141</b>	<b>53,063</b>	<b>55,652</b>	<b>56,050</b>	<b>57,622</b>

Source: EMIS, MoE

At the Early Childhood, Development and Education (ECDE), enrolment grew from 483,148 children in 1982 to 1.6 million children in 2006. The primary level, enrolment in primary schools grew from 891,533 pupils in 1963 to 7.6 million pupils in 2006. Also, at secondary level, enrolment grew from 30,000 students in 1963 to 1,030,000 students in 2006. The GER has increased from 44.8 percent in 2000 to 58.8 percent in 2006 as shown in Table 2 below.

**[Table IV-11] ECD Gross Enrolments Rate, 2000-2006**

	2000	2001	2002	2003	2004	2005	2006
Boys	46.3	48.6	53.4	58.5	58.9	<b>59.6</b>	<b>60.6</b>
Girls	43.4	45.7	50.1	55.1	56.3	<b>56.2</b>	<b>56.9</b>
Total	44.8	47.1	51.7	56.8	57.6	<b>57.9</b>	<b>58.8</b>

Source: EMIS, MOE

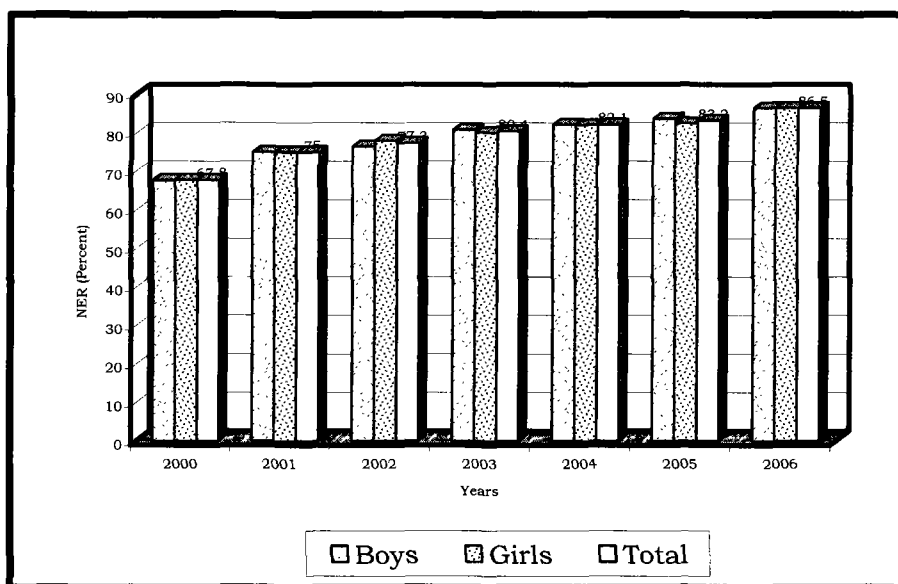
Primary schools enrolment has increased from 5.9 million in 2002 to 7.6 million in 2006. The Gross Enrolment Rate has also increased from 88.7

percent to 107.4 percent in 2006. The current NER is 86.5 percent as shown in Figure 3 below. However, despite increased enrolment, the education sector is still faced with issues of access, equity and quality..

**[Table IV-12] Primary Schools Gross Enrolment Rate, 2000-2006**

	2000	2001	2002	2003	2004	2005	2006
Boys	89.0	88.0	88.9	105.0	108.0	109.9	109.3
Girls	88.4	87.3	87.5	100.5	101.6	104.4	105.5
Total	88.7	87.6	88.2	102.8	104.8	107.2	107.4

Source: EMIS, MOE



**[Figure IV-6] Primary Schools Net Enrolment Rate, 2000-2006**

The enrolment in secondary school stands at 1.03 million with a Gross Enrolment Rate of 32.2 percent. The Government has presently announced free tuition in public secondary schools. The Policy measure is required to address the poor access to secondary education as a way of supporting the country's overall goals of equality and Education For All.

**[Table IV-13] Secondary Schools Gross Enrolment Rates, 2000-2006**

	2000	2001	2002	2003	2004	2005	2006
Boys	26.8	27.1	27.2	29.7	31.7	31.3	34.6
Girls	23.6	24.2	24.2	27.4	27.3	27.2	29.9
Total	25.2	25.6	25.7	28.6	29.8	29.3	32.2

Source: EMIS, MoE

Enrolment in tertiary institutions continues to grow from 152,487 in 2000 to 210,795 in 2006 as shown in Table 5 below.

**[Table IV-14] Enrolment in Tertiary Institutions**

<b>Year</b>	<b>Gender</b>	<b>Teacher Training Institutions</b>	<b>Technical Institutions</b>	<b>University</b>	<b>Total</b>
2002	Male	10,542	26,024	51,099	87,666
	Female	9,635	25,325	29,862	64,821
	<b>Total</b>	<b>20,177</b>	<b>51,349</b>	<b>80,961</b>	<b>152,487</b>
2003	Male	10,519	29,001	51,500	91,020
	Female	10,618	27,341	30,590	68,549
	<b>Total</b>	<b>21,137</b>	<b>56,342</b>	<b>82,090</b>	<b>159,569</b>
2004	Male	10,754	33,487	57,990	102,231
	Female	11,417	31,906	33,551	76,873
	<b>Total</b>	<b>22,171</b>	<b>65,392</b>	<b>91,541</b>	<b>179,104</b>
2005	Male	11,069	35,090	58,805	104,964
	Female	11,266	33,289	33,511	78,066
	<b>Total</b>	<b>22,335</b>	<b>68,379</b>	<b>92,316</b>	<b>183,030</b>
2006	Male	14,195	35,656	68,345	118,196
	Female	15,017	33,698	43,884	92,599
	<b>Total</b>	<b>29,212</b>	<b>69,354</b>	<b>112,229</b>	<b>210,795</b>

EMIS, MoE

## **2) Issues and challenges in educational sector reform**

Since independence, the Government has addressed the challenges facing the education sector through Commissions, Committees and Taskforces. The first Commission<sup>23</sup>, sought to reform the education system inherited from the colonial government to make it more responsive to the needs of the country. The second commission<sup>24</sup> focused on redefining Kenya's educational policies and objectives, giving consideration to national unity, and the economic, social and cultural aspirations of the people of Kenya. In 1991, the third commission<sup>25</sup> recommended the transformation of the 7-4-2-3 education system to the 8-4-4.

The Report of the Presidential Working Party on Education and Manpower Training for the Next Decade and Beyond (The Kamunge Report, 1988) focused on improving education financing, quality and relevance. The Commission of Inquiry into the Education System of Kenya (The Koech Report,

<sup>23</sup> The Report of the Kenya Education Commission (The Ominde Report, 1964)

<sup>24</sup> The Report of the National Committee on Educational Objectives and Policies (The Gachathi Report, 1976)

<sup>25</sup> The Report of the Presidential Working Party on the Second University in Kenya (The Mackay Report, 1981)



2000) was mandated to recommend ways and means of enabling the education system to facilitate national unity, mutual social responsibility, accelerated industrial and technological development, life-long learning, and adaptation in response to changing circumstances.

Recent policy initiatives have focused on the attainment of EFA and, in particular, Universal Primary Education (UPE). The implementation of Free Primary Education (FPE) is critical to the attainment of UPE as a key milestone towards the realization of the EFA goal.

The current challenges of the 8-4-4 education system are as follows:

- The system does not prepare the primary level graduates well enough to enter the TIVET sub-sector. The TIVET institutions have low enrolment as a result of non responsive curriculum to labour market, lack and dilapidated equipment, inappropriate technological and unskilled staff among others.
- It does not cater for the disadvantaged, those with special needs and those outside the formal education system. The formal schools have no facilities to address the needs of the physically challenged children.
- Overloaded curriculum- due to the content and number of subjects offered.
- High cost to parents, as a result of school requirements such as uniforms and fees in secondary and higher education.
- Limited provision of learning and teaching materials- costs are high and hence schools or parents cannot afford, and
- Limited resources to cater for operational and maintenance costs- depreciation of equipment is not catered or inadequate.

## **B. Use of ICT in Education Sector**

### **1) Development of ICT in education**

**National Initiatives:** Kenya identifies Information and Communication Technology to have a key role in promoting economic development of the country. The Government is committed to having an ICT literate workforce through making education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth. The duty on computers and its accessories have been zero rated to encourage its use and affordability. This has enhanced training opportunities in ICT and technological innovations in software development and assembly hardware in the country. The recently conducted e-learning conference conducted Nairobi, Kenya (May 2007) brought together various experts and firms of ICT in education to share their experiences in technological innovations.

**Equipping schools with ICT Laboratories:** The NEPAD initiative in Kenya established 10 model schools with e-learning laboratory as a starting point for the country in ICT in schools development. Also, the Ministry has prepared to have two secondary schools in all the 76 districts have an equipped ICT laboratory. The target is to equip educational institutions with digital infrastructure with an improved average access from the current one computer for 150 students to one computer for at least 50 students in secondary schools. There are a number of initiatives in the country from companies, NGOs and well wishers involved in supporting schools with computers ( such as Computer for Schools Society). In the case where used computers are donated Computer for Schools carries refurbishment of the computers before being donated to the schools.

**ICT Connectivity and Network Infrastructure development:** Over the years the Universities under the KENET initiative have come together to build the ICT infrastructure that promotes Wider Area Networking of the institutions and selected National polytechnics for information sharing. The purpose of the initiative was reducing the costs of connection with a common lease with TELKOM Kenya. There are a number of challenges facing access and use of ICT in Kenya which include; high levels of poverty that hinder access to ICT facilities, limited rural electrification and frequent power disruptions. Where there is electricity, the major challenge in respect to this component is limited access to dedicated phone lines and high-speed systems or connectivity to access e-mail and Internet resources. Alternative and appropriate technologies for access to Internet resources, including wireless systems remain quite expensive. Indeed, a small proportion of schools have direct access, through Internet Service Providers (ISPs), to high-speed data and communication systems. Furthermore, very few schools in the rural areas use wireless technology such as VSAT to access e-mail and Internet resources. In general there are high costs of internet provision and high costs associated with ICT equipment and infrastructure support.

## **2) Application of ICT in education**

The education sector has embraced the advances of Information and Communication Technology with the introduction of computer laboratories in schools, colleges and universities. However, the use of ICT in classroom teaching is still limited or lacking in the education institutions. The Ministry's target is to provide new opportunities for teaching and learning including offering opportunity for more student centered teaching, opportunity to reach more learners, greater opportunity for teacher-to-teacher interaction.

A number of international organizations have developed, or started developing partnerships with the Ministry of Education to facilitate the use of ICT in the Government offices and educational institutions. The emphasis has been to

create open learning forums in the universities and training institutions. This will involve a need for greater opportunities for multiple technologies delivered by teachers, creating greater enthusiasm for learning amongst students and offering access to a wider range of courses. Currently, the Kenya Institute of Education (KIE) is in the process of developing an e-curriculum. The objective is to enhance teaching and learning and also create opportunities for open learning forums in the learning environment.

### **3) ICT national policy and strategies**

The Government formulated a National Information and Communication Technology Policy that provides the framework for all the actors in ICT implementation. The policy is in place to ensure that Kenya fully benefits from efficient coordination resulting in Kenyan led solutions, emerging from global partnerships. The Government strategic plan for ICT (e-government) lays emphasis on ICT interlink between the Ministries with a planned rollout countrywide physical local area network to enhance government service provision and use of e-finance, e-commerce and e-personnel systems.

The e-government strategy outlines three broad categories pre-requisite for improved communication with the Government as consisting of the following: to harmonize functions, to carryout re-structuring to enhance services delivery and to foster adoption of multi-channel information sharing and communication; to review, enact and enforce laws related to electronic based information and communication, including interagency electronic exchange of files; to develop secure and reliable ICT infrastructure, including intranet.

The Ministry of Education has an ICT in education strategic plan that stipulates strategies and activities to be implemented for the benefit of the education sector. Training programmes are to be mounted for the education management sector comprising the entire MoEST, its agencies and institutional managers. The success in the use of ICT in all sectors will require sufficient and competent human resources that are developed and equipped in the education and training sector. To facilitate faster dissemination of ICT skills in the country, the Ministry will work with other stakeholders in establishing ICT capacities across the country especially the use of education institutions as hubs of ICT dissemination in rural areas. The Ministry shall promote cooperation with all stakeholders at appropriate forums to enhance user confidence, build trust, and protect both data and network integrity. There will be need for guidelines to prevent cyber-crime and misuse of ICT taking into consideration legislation that allows effective investigation and disciplinary action in case of misuse.

## **C. Use of ICT in Education Planning and Management**

### **1) Overview in Use of ICT in education planning and management**

The use of Information Technology Infrastructure is to improve efficiency and effectiveness of the administrative and service-delivery processes. The Ministry sees it as a necessity to have an established; high quality, robust, sustainable, secure, easily supportable and flexible information technology infrastructure that meets wide-range of education needs in planning and management. Therefore, in this perspective EMIS as an investment programme is the basis for the transformation so as to put in place systems, infrastructure and procedures to support harmonized, coordinated, regular and timely access to quality data and indicators on the various components of education management and related policy interventions. The establishment of Local Area Networks in the Ministry Headquarters and other agencies is to create an interlink service delivery mechanism. The continuous training of staff in ICT skilled staff will promote enhanced quality service provision and effective planning and decision making.

### **2) Strategic objectives for mid and long terms plans**

The strategic objectives in the use of ICT in education planning and management are as follows:

- To develop an electronic-based infrastructure to support processing, use, sharing and dissemination of available data and information at all levels
- To procure and customize specialized data processing and analysis software application systems.
- To improve access to education data for effective planning and interventions
- To avail education indicators for monitoring and evaluation of education goals and programmes

In order to achieve these strategic objectives, the EMIS investment programme has five components that address the outcomes. The five components as indicated in the KESSP implementation plan are as follows:

1. Review and harmonization of instruments and data collection
2. Data processing and management
3. EMIS development and infrastructure support
4. Analysis and dissemination
5. EMIS human resource and capacity building

The components are integrated into the annual work programme for EMIS on a rollout basis for specified activities. In order to enhance education planning and management the current plans are to have all the staff at the headquarters and the regions be computer literate through basic ICT training and statistical skills. The districts are the main implementer of the Kenya Education Sector Support programme and hence require to be facilitated with the necessary tools and skills. The use of evidence data is only possible through the improvement of the ICT infrastructure and human skills.

### 3) Key issues and obstacles in use of ICT

Though the Ministry embraces the use of ICT in education planning and management there are critical limitations in its application ranging from low level of staffing, lack of ICT skills to inadequate hardware. The following discussion provides an understanding on the specific areas of concern:

- **Staff Skill limitation:** Lack of ICT skills in majority of the staff is a hindrance to their ability to use ICT in education planning and management.
- **Inadequate ICT hardware:** Only a few MoE staff especially those on management levels have access to computers. The situation is critical especially at the province and district levels.
- **Limited computerized data processing:** Data use among the staff is a daily function but most of it is manual. This hinders efficient delivery of education services.
- **Non user friendly database system:** The ministry has limited processing of information but is not easily accessible for use in education planning and management.
- **Lack of adequate ICT expertise:** In order to have effective data management there is no for specialized training in data management. Majority of staff handling ICT support have no training in database administration, networking and web development.
- **Lack of appropriate data sharing system:** There is limited sharing of the datasets due to lack of an interlink system.
- **Data unreliability and inaccuracy:** The process of data input and also during collection leads to inaccurate data. The early stages are manual and prone to mistakes.

This then requires that all the MoE staff especially in data management and use should be provided with relevant training in ICT application based on the responsibility. The processes in the education planning and management should be documented to enhance use of ICT. Since most of the functions undertaken in education planning and management area manual, there is need for appropriate software that will harness the information generated be developed

and adopted. The limited staff implies there is higher workload in the provision of services in education planning and management. To effectively meet the service demand, there is need to promote online forums in education planning and management

## **D. Education Management Information System (EMIS)**

### **1) Structure and institutional organization**

The Ministry collects data from all levels of education institutions on annual basis in the country. In order to enhance data sue and collection, in 1998 the Ministry mandated the Central Planning Unit and Teachers Service Commission to compile data on primary and secondary levels for both public and private education institutions. There were 3 forms used for the data collection: Form A on enrolment and teachers- administered by the Teachers Service Commission and Form B-school management, drop outs, repetition and C\_ physical facilities and finance-administered by the Central Planning Unit as well as data on tertiary institutions. Also, the department of Basic education was collecting information for the Early Childhood Education.

However, the current status is that under the EMIS investment programme we have one data collection procedures that are decentralized at the district levels. Both the TSC and the Ministry will prepare a work plan that will be implemented at the districts level and data disseminated to all the users.

Currently, the education sector is a major producer of data with a wide range of data collection instruments processed and/or supported by isolated and independently developed systems within the Ministry and its education agencies. The principal objective of EMIS is to modernize, harmonize and integrate collection, processing, analysis, dissemination, and use of education data.

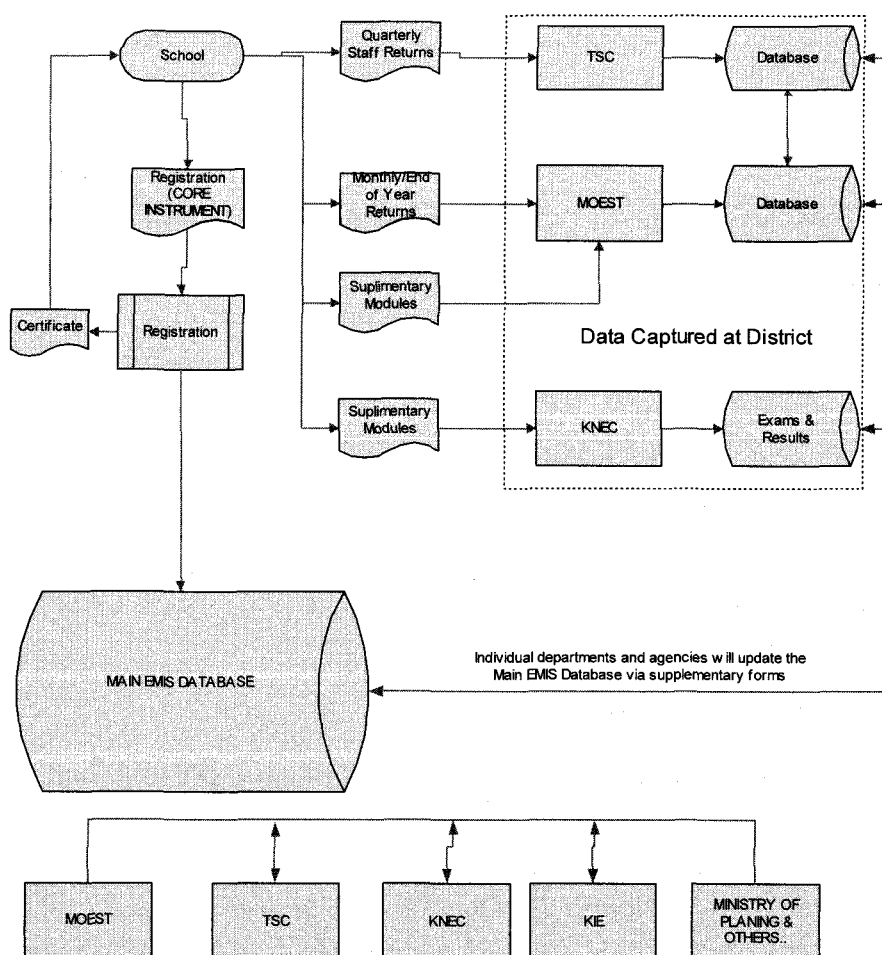
In this regard, the Ministry with financing support from World Bank contracted Techsphere Systems Ltd in December 2004, to carry out needs assessment, design and implementation support for Education Management Information System (EMIS) required to modernize, harmonize and coordinate education data. The outcome of the report enabled the ministry to procure services of vendors for implementing the EMIS infrastructure and development support.

EMIS is to be a framework that serves all the departments and SAGAs for data management that provides information for tracking progress on: access, retention, relevance and quality of education, disparity and resource allocation and utilization. Upon completion it should be a computerized system that has data and capacities for quantifying relevant indicators for assessing the

achievements and impact of programmes and interventions in addressing the issues facing the education sector.

### *Harmonized EMIS framework*

The Ministry has endorsed an EMIS framework that is harmonized with an integrated information system that is relevant infrastructure for the education sector. This is intended to support the Ministry and the various education agencies acquire the necessary information that supports policy analysis, planning and management of education; including necessary intervention measures.



**[Figure IV-7] Flow of EMIS Instruments and Data Collection**

## **2) Data collection methods and frequency**

The Ministry collects the school data returns 3 times a year using the Form A questionnaires for each term (Teachers service commission. The forms are forwarded to the District Education Officers (DEOs) who distribute to the schools to be completed by the Headteacher's. The reference data collection months are February, May and September annually. The data is processed centrally at the ICT Division, Teachers Service Commission headquarters by a team of 25 data entry clerks. The TSC is currently piloting the decentralized data processing for 40 out of the 76 districts.

The Central Planning Unit forwards the forms to the DEOs for data collection who distributes them to the head teachers for completion. The reference date for data collection is the month of September. Over the years the data has been processed at the headquarters using the data entry clerks. However, 2005 the processing of the data was decentralized to district level.

Under the harmonized data collection procedures as from the year 2008, we will have a common core instrument that will capture data needs for the TSC and the Ministry.

## **3) Data sharing**

The fact that there are different data collection points has led to duplication and voluminous data collection processes. The sharing of the data sets has been minimal and most cases involving summarized information. This has created challenges in inconsistency of the data processed and disseminated.

In order to overcome these challenges it has been proposed that all the data collection be harmonized. The EMIS programme is putting in place the necessary infrastructure to have the data collection, processing and dissemination support the harmonization process. This is through having LANS at the district and a WAN at headquarter as well as providing computers.

## **4) Data collection instruments**

The instruments are reviewed on annual basis in order to reflect the changing needs and improvement of the data collected. The key data sets collected are as follows:

- Enrolment profile: Number of students, age,
- Teacher profile: Number, qualification, subjects, workload
- School characteristics: public/private, mixed/boys/girls, day/boarding
- Physical facilities: Buildings and equipment
- Finance: Income, Grants, expenditure
- School management:



- Quality assurance
- Performance

## **5) Completion of instruments**

At school level the head teacher is responsible for the completion of the school data returns forms. They use the class registers prepared by the class teachers to complete returns on pupils and staff registers to compile the teacher profile. Other information is provided from the records available on finances and school management returns.

## **6) Data collection manual and training**

Over the years there has been no manual for data collection. However the instruments have instructions which are used as guidelines for the head teachers and the Zonal Quality Assurance Officers. The Zonal Quality Assurance is the direct contacts with the head teachers during the data collection. They are responsible for the Zone which is the smallest administrative unit in education of up to a maximum of 30 primary schools.

## **7) Users of education data**

The users of EMIS data are both internal and external. The internal users are all the Directorates and district staff who utilize the information for their day to day planning and decision making. Also, the senior management uses the information for policy decision and budgeting.

The external users include the public and the private sector individuals and organizations. The Ministry of Planning and Ministry of Finance utilize the data intensively to ensure that appropriate budgeting levels are determined for the education sector. This is critical especially in the support that the government has committed in the provision of Free Primary Education, Teacher wage increase as agreed with the Teachers Union and provision of education services.

Other users of the data are; research institutions, UNESCO agencies, research students and various Ministry departments.

## **8) Data processing and management**

The data collected is processed in access database that provides school level data and reports for summarized for selected data needs.

## **9) School accessibility and statistics regulation**

All the education institutions both public and private are accessible in providing information as provided in the Education Act and the Statistics Act.

### **E. Improving Education Planning and Management**

In order to succeed in providing accurate and reliable data emphasis has been laid to increase the response rate as well as integrating it with validation checks during the year 2003 annual school census. The response rate increased from 75% to 90% in 2003; however the centralized data processing system took over 8 months with only 30% of the 55,000 school data returns were processed by the Ministry staff. A decision had to be made to have the data processed by an external firm since the data was required for reporting the outcome of the Free Primary Education programme.

The best achievement is the development of a proposal for World Bank support in the establishment of the Education Management System in 2003. A comprehensive support for the EMIS was designed. The outcome has been support to EMIS in infrastructure development from the headquarters to the districts. A recommendation made was harmonizing all the data collection and implement a data sharing framework.

Although there have been initiatives for development of databases for policy analysis and dissemination for example; Child Info, KENINFO there have not been domesticated to meet the needs of the ministry.

The data from the school mapping will be instrumental in education planning and management. The mapping schools will guide the Ministry in teacher management and resource distribution to ensure effective utilization of the limited resources.

[TableIV-15] Data collectors and users

Function	Centr- al Plann- ing Unit, MoE		Text- book Manag- ement Unit, MoE		Teach- ers Service Com- mission , MoE		Kenya Nation- al Exami- nation Counc- il		Resea- rch Instit- utions (KIPP RA, Unive- rsities, etc)		Mini- stry of Finance		UNES- CO Agenc- ies		Kenya Nation- al Bureau of Statistic		Mini- stry of Health	
Produced /Used	C	U	C	U	C	U	C	U	C	U	C	U	C	U	C	U	C	U
School Personnel ( Teacher -s, Non Teaching)	x	x			x	x		x		x		x		x		x		
Infrastru- cture	x	x							x		x		x		x			
Pupil Enrolment , attendance	x	x	x	x	x	x			x		x		x		x		x	
Pupils Performan- ce		x					x	x	x		x		x		x			
Demogra- phic(Pop ulation)		x							x		x		x	x	x	x	x	x
Geograph- ic school location	x	x				x			x		x		x	x	x		x	
Textbooks	x	x							x		x		x					
Finance	x	x							x		x		x		x			
Orphans	x	x							x								x	
Grade Repetition	x	x							x				x					
Drop outs	x	x							x				x					
Classes	x	x							x									
Classroom -s	x	x							x									
Special Needs children(di- sabilities)	x	x		x					x								x	
School Managem- ent	x	x		x														

## **F. Required Development Partner Support**

The development partners are playing and will continue to support the improvement of the ICT infrastructures and development for the education sector. More support is required to enhance the use of ICT in the education sector. Areas that require support by the Development partners such as UNESCO further s are as follows:

- MoE Staff ICT Capacity building: ICT literacy and statistical training, short and long term trainings on specialized courses.
- Development or customization of EMIS data analysis tools for planning and policy decision
- Acquisition of modern ICT hardware for data collection and processing
- Development of an EMIS online data capture system
- Procurement of computers and printers for the regional areas (province and district staff).

Currently, the EMIS investment programme under the support of IDA-World bank equipped 76 districts and 8 provinces with 5 computers, 1 heavy duty printer and a physical lay out of Local Area Network (LAN) with 12 points.

## **G. Experiences and Lessons Learnt**

So far in the Ministry there are two experiences on data management that I can share (a) Decentralization of the data processing and management of the annual school census from the headquarters to the 76 districts and (b) Receiving of monthly data through mobile phones from head teachers.

### **1) Decentralization of data processing**

The idea of processing data at the district level was very exciting and from the start everything looked very possible. In 2005 school census cycle, instead of going through a one and half year cycle of data collection, processing and analysis, we worked out a mode of having the data ready in a record 3 months. Arrangements were made for the district to collect the data within one month and training of the district team in data processing conducted to have data processed within a month. All arrangements were made and data was processed in all the districts.

A supervisory team was sent to all the districts and they were assisted to complete the data processing. The districts forwarded to the headquarters the compiled data sets in the 4 month of the exercises. This was a good achievement since what was required was to merge all the data sets and compile and analyse the data sets for the whole country.

Despite the good achievements we discovered that nearly half of the submitted databases could either not open or were tampered with. The finalization of the 2005 school census became a nightmare because retrieving of the information was hampered by the lack of experience in the use of ICT by the district team. This noble idea has become difficult to disengage for the 2006 school census because the team was not given adequate training in the data capture system and the system did not have adequate validation checks and merging features.

The outcome has shown that a pilot of all stages is very critical. Also, the fact that the officers core duty was not on data management is an issue that requires to be addressed at the district and headquarter.

## **2) Monthly data submission using SMS-Mobiles**

The Ministry has piloted the use of short messaging services (SMS) through the mobile phones for sending school data on enrolment and teachers on a monthly basis communication and arranging for peer meetings for improving quality of teaching through Key Resource Teachers. Partnership with the mobile company was sought and with the support from DFID. However the challenge is to have the telecommunication companies TELKOM, Safaricom, Celtel among others in enhancing data flows through affordable lease lines, internet services and SMS technology. Another challenge is having adequate human capacity and know how in managing the whole process of data collection and support to the head teachers whenever they have problems of transmitting their data messages.

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## **7. Third Millennium Challenges Facing Six Countries on Educational Planning and Management Through the Use of ICTs<sup>26</sup>**

### **A. Introduction**

The new media and info age of *Web 2.0*<sup>\*</sup> ushers in Third Millennium challenges to all nations in actively realizing the Millennium Development Goals (MDGs), particularly in the hope of winning the already less-than-a-decade race to Education For All (EFA) by 2015. Developing republics, five in Asia and one in Africa, now come together to Seoul for a UNESCO KEDI Study Visit for improving education planning and management through the use of information, communication and technologies (ICTs) by way of info-sharing and continual learning.

Reading through the national papers of the six countries, one can easily surmise a common understanding that ICT has something to do with information, learning, tools and systems. Computers and connectivity are two basic needs that recur in the pages of the country papers. Why is this so? Have we associated ICT with simply computers and Internet connection? We do not dismiss the thought as simplistic but there is a great deal of wisdom to such a thought. Indeed, when we talk of ICT, we do mean basic use of tools and systems; we see the value of information-sharing, capacity building via innovative modes of delivery, and this is now shaping how we “see” and “think” things through constantly growing “knowledge societies”. The Web as we know it, now becomes the biggest knowledge hub, the largest learning environment and ICT platform in the world.

If this is true, then we might as well learn more from what we are currently doing and take advantage of the wealth of information and experience from the other countries, most especially from our gracious host, the Republic of Korea through UNESCO KEDI’s ROK-FIT Project as a means to further expand the gains of numerous regional and international meetings since the clarion call of the Dakar Framework for Action in 2000.

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<sup>26</sup> This paper was presented by Pierangelo B. Alejo, Education Specialist in Flexible Learning Solutions Unit, Southeast Asian Ministers of Education Organization, Regional Centre for Educational Innovation and Technology (SEAMEO INNOTECH) at UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs in Seoul, Republic of Korea, 2007.

※ A phrase coined and popularized by the first World Wide Web Conference in 2004 that refers to a new generation of web-based information or knowledge communities and hosted services, like social networking sites/software, wikis, blogs, etc. and thus influence and change the ways developers and end-users have used the Web as a knowledge and learning platform.

“Within the region, the Republic of Korea is the most advanced in terms of indicator development on the use of ICT in education.” (UNESCO Bangkok, *Developing and Using Indicators of ICT Use in Education*, 2003, p. 3) These *indicators* were formulated by the Ministry of Education and the Korean Educational Research and Information Service or KERIS such as *support*, *input*, *utilization* or *output* indicators as classifications of development evidence on the use of ICT in education.

Just recently, United Nations Secretary-General Ban Ki-moon, on the occasion of World Telecommunication and Information Society Day, spoke about wider access to ICT with a special bias toward young people who should be involved in “rising out of poverty and illiteracy and to realize their full potential.” (UN Secretary General’s Message, 17 May 2007). Mr. Ban noted the importance of capitalizing on the benefits of globalization, observing that the younger generation is a driving force behind the development and use of new ICTs, and therefore adding to the long list of reasons why all the more we should use ICT in education.

We begin by buckling up for action this time not with policymakers but with you, the actual persons who will be directly responsible for applying the technical assistance and learning gained from recent capability building activities, TA projects and study visits. It is now “your turn”, so to speak, in the gargantuan task of improving your respective educational management and leadership of the various programs and courses of action to achieve the goals stipulated in your education master plans. Yes, you are the person of the hour! In 2006, the Time “Person of the Year” was “you” (Time, December 25, 2006 – January 1, 2007). The world-famous magazine chose to publish their *year-ender* issue with a shiny, mirror-like film pasted on a cover design of a desktop computer, so that when you look straight on to it, you see yourself. Interestingly, it mirrors the idea that you and I, not institutions nor elite groups, control, co-create and transform the Information Age. Time Magazine’s largest issue ever printed somehow is indicative of the myriad inhabitants of this planet who are actually users of ICT. It all comes down to the fundamental fact that it now depends on the education person’s utilization of ICT, web-based or otherwise, in improving the lot of education practices, processes, management and ultimately, leadership in achieving the goals -- leadership in learning.

The following representatives submitted national papers on their country’s issues, challenges and experiences on the use of ICT in educational planning and management:

**Azerbaijan**

Azad Akhundov, Chief Executive, International Relations Department; Vugar Abdulrahimov, Leading Expert, Strategic Analysis, Planning and Personnel Management Department, Ministry of Education



<b>Armenia</b>	Robert Stepanyan, Head, Development Programs Department; Arshak Harutyunyan, Deputy Head of Department of International Cooperation and Diaspora
<b>Uzbekistan</b>	Komiljon Karimov, Education Programme Officer, UNESCO Tashkent; Dr Alisher Tuychiev, Head of Secretariat, Ministry of Public Education; Shukhrat Abdullayev, Director, FAKT Agency
<b>Georgia</b>	Berika Shukakidze, Head of the Analytical Department, Ministry of Education and Science; Otar Soselia, Head of EMIS, Ministry of Education and Science
<b>Mongolia</b>	Gantumur Selenge, ICT Education Officer, Mongolian National Commission for UNESCO; Dunjinnamdag Oyunbileg, IT Officer, Ministry of Education Culture and Science
<b>Kenya</b>	Charles Obiero, Senior Economist and Staistician, Ministry of Education; Barnabas Sang, ICT Head, Ministry of Education

In this synthesis focusing on ROK-FIT Phase II countries involved, we hope to see in a clearer format, the many similarities and differences in all six nations particularly in each one's effort to improve education planning and management through the use of ICTs. More importantly, we will capitalize on *new learning*, *re-learning* and perhaps even *un-learning*, during and after the Study Visit, with a special glimpse of Korean models and archetypes.

I propose that we attentively look into each one's presentations, document the learning from the actual visits, conversations and lectures, and finally generate the energy-giving questions, answers and stories in a constructive and appreciative manner. In this way, I hope to learn with you as well, particularly outlining the conclusions and recommendations we will gain from a much-anticipated and fruitful study visit.

## **B. Guideline of National Reports and Discussion Questions**

For uniformity of content and form, the writers of the national papers tried to conform to the following general guidelines:

1. Education structure and general educational issues and challenges
2. The use of ICT in education sector
3. The use of ICT in education planning and management

4. Education Management Information System (EMIS) in-country
5. Best practices and failures to share in the improvement of education planning and management through the use of ICT
6. Support or assistance needed from donors and other agencies
7. Other helpful experiences or lessons

In a separate handout, a tabularized form of the participating countries' reports is

shown in a matrix (**Annex A**) for the purpose of expanded discussion and country case presentation. Item numbers 2 and 3 above are combined in the matrix (i.e., Number 3) as "Use of ICT in education".

### **C. Education Structure and General Educational Issues and Challenges**

The ROK-FIT Phase II countries with the exception of **Kenya** and **Azerbaijan**, are either decentralized or in the process of decentralization in terms of the vast education landscape governance and structure. Kenya's education governance is centralized but with four Directorates, Support Departments and Parastatals. Azerbaijan appears to be centralized in view of how its State Programmes implement the priority areas of education. In terms of compatibility with the EFA goal, all participating countries have established and robust K-12 Basic Education (i.e., pre-school, elementary and secondary education) structure except for **Mongolia**, which has 11 years of basic education. Looking into the commonalities in structure is important, at any given time and period of a country's growth and development, especially Basic Education in general, because the nation's children/youth is a country's most important resource, priority national investment and duty, precisely for such a country to sustain its development and survive. Technical vocational schooling, informal and non-formal learning, higher education and lifelong learning – all come naturally into the picture of each country's education structure.

In **Armenia**, there is a continuing education reform in structure, curriculum, syllabi, and assessment system. They are faced with the challenge to increase computer literacy for a massive scale-up application of new technologies with the intention to make ICT as a precondition to eliminate traditional "barriers".

**Uzbekistan** is looking forward to an improved achievement rate of the goals and objectives of the NPPT, e.g., the *Children of the Third Millennium* Program addressing the lack of accurate and sufficient education data, empowering family and *makhalla* and improved relevance of education.

**Azerbaijan** on the other hand, is looking at education reform in structure, instructional and physical resources addressing weak instructional materials in

secondary education and lack of school buildings, as well as curriculum development, in-service training and learner assessment.

**Georgia** faces the challenge of creating a knowledge-based society and economy and since 2004, their policies aimed at improving governance and funding mechanisms as well as access to modern and stable ICT infrastructure.

**Mongolia** would like to proactively address the lack of professionally trained staff/teachers, and development of print-based materials and other modalities of content delivery, especially focusing on improving rural education in the country.

**Kenya** faces the following challenges: access, equity and quality issues – foci of several Commissions for the attainment of EFA and UPE; overloaded curriculum; lack of alignment in education system. In their public launching of the National ICT Strategy for Education and Training, the Minister of Education Dr. Noah Wekesa stressed as important and urgent, three main broad categories: e-Governance, EMIS and e-Learning (Speech of the Hon. Dr. Noah Wekesa, 2 August 2006).

Should there be prioritization or sequencing phases of ICT in Education funding in terms of national investment in the different levels of education? It would be noteworthy to mention here the lessons learned in Latin America as suggested by the Head of IIEP Buenos Aires: “In defining the appropriate public policies for using ICT in education,” and even before spending on ICT, Ministries of Education, schools and its partner institutions need to consider seriously: “(1) how to optimize efficiency when allocating human and physical resources; and (2) how to make the best use of existing resources.” (Margarita Poggi, IIEP Newsletter, April-June 2007)

If we are interested in continuous improvement of education planning and management through the use of ICTs, then should we rethink the ways we learn/work in the various levels?

#### **D. Improving Education Planning and Management through the Sse of ICTs**

The development of education planning and management of the ROK-FIT Phase II countries through the use of ICTs generally follows three tracks, namely:

1. Increasing and establishing ICT infrastructure in the institutional level (Ministry/schools) by modernizing and adding more computers, software,

and improving connectivity/bandwidth;

2. Identifying appropriate software, communication/data collection-dissemination system, and capacity building activities for teacher/staff/stakeholders qualification towards building a knowledge society/economy, and thus seeking development (technical) assistance from UNESCO/KEDI and other agencies and donors; and
3. Improving radically the existing in-country educational management information systems for better and accurate data gathering and analysis, aimed at efficient and effective policy reform, decision-making, programs implementation and educational leadership via multi-modal delivery systems and facilitation of education (quality teaching-learning) processes.

For items 2 and 3 above, guide questions on EMIS and an analysis table of data collectors and users have been given to the participants for their better understanding of existing and potential improvement of EMIS in-country. All six countries have a common thread in terms of heavy usage and producers of data as it goes down to the level of local government units and schools. As for the various functions of data needed or collected, it may vary from country to country. What is important to consider and rethink in EMIS are the following:

- Whether it is fully automated and utilized or not, it should cover all necessary information about current and safely predictable future for policy/decision –making, operations, research and development;
- Clear data/info collection and dissemination across all levels
- Usage and optimization of the system in place

## **E. Technology and Education**

“Technology” and “education” are words that we can easily associate and can never separate. Knowledge societies are predicated on the extension of the comprehension of these two terms. Anent this premise, all ROK-FIT Phase II countries having similar Basic Education structures and programs are all in agreement that their education systems are changing. A common denominator in the amelioration process is the continual introduction of innovations and technologies. Many of the projects and initiatives mentioned in the national reports are supported by ICTs. Building knowledge societies are largely dependent also on the “collaboration between institutions” (Susan D’Antoni, IIEP Newsletter April-June 2007). The appropriate and enabling policy environment in each country is paramount, as it is in a strong political will or commitment to make the utilization of ICT impact beyond teaching and

learning and thus build a knowledge and service oriented society of the 21<sup>st</sup> Century.

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<http://www.unescobkk.org/index.php>

[Table IV-16] Synthesis Matrix for Discussion/Country Case Presentations

	<b>AZERBAIJAN</b>	<b>ARMENIA</b>	<b>UZBEKISTAN</b>	<b>GEORGIA</b>	<b>MONGOLIA</b>	<b>KENYA</b>
<b>1. Education Structure</b>	Appears to be centralized in view of State Programmes implementing priority areas of education; 12 years or more free Basic Education	Gradual decentralized management of education system towards needs of knowledge economy; 12 years Basic Education	Transition from centralized planning system to a more open and democratic pluralistic culture; 12 years Basic Education (MPE)	Democratization of management processes through continued structural reforms; 12 years Basic Education	Decentralized MoECS through Aimag local education authority; 11 years Basic Education	Centralized, with four Directorates, Support Departments and Parastatals; 3-5 years ECCD + 12 years Basic Education
<b>2. Major Challenges and Issues</b>	Education reform in structure, instructional and physical resources (weak instructional materials in secondary education and lack of school buildings), curriculum development, in-service training and learner assessment	Education reform in structure, curriculum, syllabi, and assessment system; increase computer literacy for scale-up application of new technologies; make ICT as precondition to eliminate traditional "barriers"	Improved achievement rate of the goals and objectives of the NPPT, e.g., <i>Children of the Third Millennium</i> Program addressing the lack of accurate and sufficient education data, empowering family and <i>makhalla</i> and improving relevance of education	Creation of knowledge – based society and economy; since 2004, policies aimed at improving governance and funding mechanisms; access to modern and stable ICT infrastructure	Lack of professionally trained staff/teachers; development of print-based materials and other modalities of content delivery	Access, equity and quality issues – foci of several Commissions for the attainment of EFA and UPE; overloaded curriculum; lack of alignment in education system

<b>3. Use of ICT in Education</b>	Provision of modern computers, “learning objects”, and conditions for flexible management in schools	Increase learners’ academic progress and quality of teaching through computer literacy and ICT application	Increasing access to modern PCs; scant progress achieved in using ICT for educational planning and management	To increase access to computers and Internet in each school and ICT will be integrated into the national curriculum	Subjects from 8 <sup>th</sup> to 11 <sup>th</sup> grades; computerization of all schools in stages; E-Mongolia National Program	Establishment of computer laboratories; provision of new opportunities for
	<b>AZERBAIJAN</b>	<b>ARMENIA</b>	<b>UZBEKISTAN</b>	<b>GEORGIA</b>	<b>MONGOLIA</b>	<b>KENYA</b>
<b>4. Status of EMIS in-country</b>	Electronic and paper formats of data collected in pilot regions;	No data collection, report or analysis before 1999 until EMIS was introduced; controlled	Education statistics derived from State Department; EMIS for further development: info gathered extensively but not used extensively	Largely paper-based (statistic forms)	Data collected in paper form and sometimes electronically using CDs	Reliance on forms and returns; no manual for data collection
<b>5. Best Practices and Lessons Learned</b>	Constitutional mandate; National ICT Strategy of Azerbaijan (2003-2012); Education Strategy 2007	Improvements in higher education; TPD: Teachers Professional Development	High level of education of multicultural populace; Ziyonet; key issues about EMIS/SMIS	EDPRP strategic principles towards the formation of an information society	Vision 2010 as model to implement ICTs in education sector (knowledge centers in Ulaanbaatar; lifelong learning through ODL)	Decentralization of data processing and management and capitalize on u-learning in data collection; EMS in 2003; KESSP
<b>6. Help Needed</b>	In resolving	In NCF: new	TA in improvement	Consultancy	ICT-based	Capacity

	mismatch of users and technology; provision of training and resources	Content, Structure and Principles	of the use of ICTs as a tool for better education planning and management and as tool for	support, TA in further improving ICT use in education and education planning and management	training for teachers; development of print materials and e-contents; utilize broadcast technologies along with web-based ones;	building in national and district levels; provision of more computers and improvement of connectivity
<b>7. Success Stories to Share: Opportunities</b>	EPP Initiatives and Education Reform Projects with the WB	Cascade Model and Cyclic Methodology in TPD	Use of <i>indicators</i> ; turning teachers into champions of ICT use (INSETT);	Deer Leap Program; ESRSP or Ilia Chavchavadze Program; GEDA Project	IT taught as a subject from 8 <sup>th</sup> to 11 <sup>th</sup> Grade; blended learning included in the education master plan	Several initiatives supporting the use of ICT in education



## 8. Discussion

During the study visit programme, the participants saw Korea's accomplishments in educational development in the nation's determination, the public's willingness to follow, the media and campaign's support, and the political will for education. ICT is considered just a tool to reach higher goals.

With the Korean government being the front runner in developing and providing better education for its citizens, and being the backbone of NEIS operations and maintenance, ICT application has spread everywhere; in buses, subways and more. ICT was a national priority that all schools be connected to the internet, and every teacher should have at least one personal computer. This policy was created by the president and support from the government helped Korea attain its current level in the IT industry.

Also, what should be learned from the visit is not the application of the ICT but how Korea achieved a high level of development. Korea's development can be a model for other countries, especially in the way human resources and funds are managed. Motivation and a passion for working causes society to leap forward and become successful like Korea. Korea's mission to discover its own weaknesses and learn from other countries also makes it a driving force.

However, the issue of overestimating ICT knowledge and overloading ICT onto children should be raised. Although it is just a mental difference, it is preferable to let kids play around and be active, rather than being over-exposed to technology. Too much internet usage can be a serious problem, unwise and unsafe for children. Therefore, making appropriate ICT is always an issue. There are several concerns due to the fast-growing and ever-changing development of ICT. Though many believe that the process will force people to adapt, the appropriateness of ICT is a problem, especially for kids. In terms of controlling ICT, the main problem would be using the internet at home. Direct control is not a good method and time control is also not possible, as always preventing someone from doing something, causes them to want to do it more. The best way is communication. Kids are over exposed to the internet due to curiosity, and with fast adaptation, kids can use computers without any fore-knowledge. Therefore, communication and various activities are needed for the correct use of ICT.

The Korean government made the decision to transform the country into an IT country, stimulating the private sectors to invest and make better software. Furthermore, formal laws and regulations have been created to support them and help schools teach more accurate information. Due to rapid change, the adaptation of flexible learning is the best solution for developing countries as there is no way to force people to switch to this new paperless system. The best

way to bring both worlds together is to rely on both statistical and paper-based technology.

ICT is improving all over the world. By applying these mechanisms in countries, ICT and EMIS will help improve the education system. Nations have invested much in education and as a result, developed and gained significantly. There will be endless debate on ICT but it's in progress and developing and adapting to each country's system will be the key. It is very hard for developing countries to make this kind of progress, and they are very impressed with the infrastructure and the people actually using it in Korea. After learning many aspects of ICT in Korea, hopefully nations can look at Korea as a model and attain the same kind of success.

Education systems are rapidly changing, with every country trying to become globalized. Educational systems are changing in indigenous societies as well. In terms of the e-learning sector, it's all about new knowledge in a competitive society. In Korea especially, there was amazingly fast ICT development due to promotion and support by the president and the government. ICT started 10 years ago, however, the situation is different with each country as it depends on how they approach its use and promotion.

When looking at equity and quality in a conventional and ICT-based society, to optimize the system's use, a balance should be created then guided by experts and resources centers; in reality there are many variations and balance is never a peaceful process. Since efficiency is encouraged in management, there must be a balance between equity and quality, and also between conventional and ICT-based instruction.

During the discussion, leadership was also seen as an important aspect, from a principal in a middle school to head of a company, similarities were found. Whether they are government-led or are private sector-led groups such as KERIS and KEDI, the difference between companies can be seen in their management. Leadership is one of the most important skills in business and to avoid crises when a leader makes a mistake, everything should be checked carefully. Decision making is very important and accurate knowledge is needed since a lot of money can be wasted. ICT is not always equivalent to creativity or success, it is merely a skill, and there should be a balance between nature and technology. Also, due to the high cost of ICT, there are problems in providing the less fortunate with ICT. The rapid development of ICT has created problems such as how to continue its development more humanely and qualitatively. The debate will never end, but it is a process nations will have to take as the world is becoming more and more "borderless".

## V. Conclusion <sup>27</sup>

### 1. Summary and Outcomes of the Study Visit

#### *Day 1 (10 July 2007)*

The first day of the Study Visit was highlighted by three activities namely: [1] the Introduction of the Programme, Participants and Korean Education at the Korean Educational Development Institute (KEDI); [2] the visit to the Korea Education and Research Information Service (KERIS); and [3] the visit to the Ministry of Education and Human Resources Development (MOEHRD).

The opening speeches by Dr Hyung Yeel Koh, KEDI President, Dr Byong Hyun Lee of the MOE&HRD, and Dr Ilyong Cheong of UNESCO, and introductions, provided the international participants with a very clear picture of the desired objectives and intended outcomes for the study visit program. The paper-presentation of Dr Sang Hoon Bae achieved the purpose of providing an overview of Korea's economic and social development as well as explained how education policies have been efficiently linked to their country's economic progress, and future challenges. Prof. Hyun-Jeong Park clearly elaborated the development of educational management information system in Korea, its history, system development and the challenges they have encountered and how they have addressed those challenges accordingly. Dr YoungHwan Kim presented to the delegates a good picture of ICT development in Korean Education especially concerning the processes involved through the years, the role of ICT in Korean education development, and future issues for the sustainable development of Korean education with robust e-Learning programs.

The visit to KERIS facilities and the interface with KERIS experts was a very good and friendly learning experience for the delegates. The National Education Information System or NEIS was fairly introduced as well as KERIS' other activities. The participants were also toured around the facilities highlighting the visit to their u-learning model classroom or *u-Class*, showcasing some of the most advanced computing devices and learning tools.

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<sup>27</sup> This part was written by Pierangelo B. Alejo, Education Specialist in Flexible Learning Solutions Unit, Southeast Asian Ministers of Education Organization, Regional Centre for Educational Innovation and Technology (SEAMEO INNOTECH) as a final report of the UNESCO-KEDI Study Visit for Improving Education Planning and Management through the Use of ICTs.

The author is responsible for the opinions expressed here, which are not necessarily those of UNESCO, KEDI, and other participants.

The visit to the MOE&HRD was a good opportunity for the participants to understand the actual seat of decision-making and planning in implementing educational policies and programs in Korea. Mr. Seung Gwon Yoo gave an overview of planning and management procedures at the national level utilizing ICTs.

Overall, the Day 1 sessions provided a torrent of Korean experience and explanation as to how the country achieved a certain high level of development in terms of ICT use in education in general, and in its utilization in educational planning and management in particular.

### ***Day 2 (11 July 2007)***

The second day of the study visit marked a very practical way of understanding the concrete application of theoretical principles, processes and descriptions of ICT utilization in the field.

The international participants went to visit three places: [1] Seoul Sinhak Elementary School; [2] Incheon Buwon Middle School; and [3] Incheon Metropolitan Office of Education.

The visit to the two Korean schools was an eye-opener for the international participants in the sense that they were given a glimpse of a u-learning class in action. From the moment the delegates arrived in the school, they were greeted by the principal and teachers in traditional Korean attire and by students who were taking digital pictures and videos for their actual u-learning class assignments. The participants observed at how students in the elementary and middle schools were showing their assignments and future plans using their PC tablets, with very minimal guidance from their classroom teachers. Students were the real managers of the “learning objects” and information they collect and manipulate using various software applications.

Seeing the schoolchildren in action, i.e., engaged in action learning and utilizing ubiquitous learning devices was such an amazing sight to see and this provided the participants with a better understanding of how ICTs are used in education / in the classroom.

The visit to the Incheon Metropolitan Office of Education also proved to be a very interesting stop for the delegates for there they were given a chance to tour the high-security special servers facility that keeps and maintains the management of information system locally and with the national level. The local Office of Education officials gave a very thorough explanation on the role of their Office in the matters of collecting and managing educational statistics that consistently guide their well-informed decision-making and policy implementation.

### ***Day 3 (12 July 2007)***

On the third day of the Study Visit Program, a synthesis paper-presentation was delivered by an international expert from SEAMEO INNOTECH entitled “Third Millennium Challenges Facing Six Countries On Educational Planning and Management Through the Use of ICTs”.

The synthesis basically covered four major components as presented:

- Introduction and setting;
- Education structure and general education issues and challenges facing the ROK-FIT Phase II Countries;
- Improving Education Planning and Management through the use of ICTs; and
- Technology and education.

It also provided in a matrix format, the countries’ salient reports following the guideline of national reports and discussion questions specified by the organizing body. The paper also presented three tracks in relation to the development of education planning and management of the ROK-FIT Phase II countries through the use of ICTs namely, [1] Increasing and establishing ICT infrastructure in the institutional level (Ministry and schools) by modernizing and adding more computers, software and improving connectivity or bandwidth; [2] Identifying appropriate software, communication and data collection-dissemination system, and capacity building activities for teachers/staff/stakeholders qualification towards building a knowledge society/economy, and thus seeking technical assistance from international organizations like UNESCO, KEDI and other agencies/donors; and [3] Improving radically the existing in-country educational management information systems for better and accurate data gathering and analysis, aimed at efficient and effective policy reform, decision-making, programs implementation and educational leadership via multi-modal delivery systems and facilitation of education (i.e., quality teaching-learning) processes.

Immediately following the synthesis, 6 country cases were presented.

### ***Day 4 (13 July 2007)***

The last day of the Study Visit was accentuated by a presentation and discussion on tools and models in the use of ICT in education planning and management by Dr Chang Hwan Kim, Director General for Educational Statistics, KEDI, and was moderated by Dr Jon W. Seo of KERIS. Dr Chang Hwan Kim handheld the participants in a virtual tour of the web-based platform where education statistics in Korea are efficiently and optimally utilized. The

web pages are all in Korean though, so the participants could hardly follow some parts of the projected slides.

A discussion on the field visits, issues and best practices, moderated by this representation was conducted, before the programme came to a wrap-up and close.

The lead discussant first presented some guide questions prior to opening the flow of discussion:

- What impressions, new knowledge and learning did we gain from our visit to \_\_\_\_ ?
- Where or in what aspect of \_\_\_\_ can we find its best features/services/success stories?
- Any possible are for improvement or point of weakness?
- How else can \_\_\_\_ help motivate/stimulate and sustain the interest/engagement of stakeholders (teachers/staff/officials/etc.) ?

In the post visit discussion, the international participants were asked about their reactions, feedback, comments and learning gained from their visits to *KEDI, KERIS, MOEHRD, Seoul Sinhak, Incheon Buwon, and Incheon Metropolitan Office of Education*.

Together with the participating ROK-FIT Phase II countries, the discussion focused on the following Best Practices, Issues, and Recommendations:

***Best Practice 1*** – The Republic of Korea’s openness and willingness to share their experiences for the amelioration of education, educational planning and management with other countries and regions.

***Best Practice 2*** – The real, no-nonsense government, inter-international organization and inter-office support and cooperation existing in the country.

***Best Practice 3*** – The NEIS operation and maintenance by the country’s very own, local Metropolitan Education Office.

***Best Practice 4*** – The country’s initiatives and try-outs (pilot programs) in e-learning and u-learning.

***Best Practice 5*** – The practice of “Credit Banking” in Higher Education.

***Issue 1*** – The need to clarify meanings or definitions of two different things: (1) ICT in Education in general; and (2) ICT application in planning and management, e.g., a cost-efficient and effective EMIS, for more clarity, focus in conference themes and discussions.

**Issue 2** – The motivation of teachers, staff and other stakeholders in the use of ICTs in education – how do we do it and how is it sustained?

**Issue 3** – The passion of a people for education is good, but the apparent education demand overload for students/youth may not be as good.

**Issue 4** – Throughout the sessions and in all the Korean presentations, there was not a single negative aspect reported or major area for improvement in the systems, programs and projects – a sign that Korea is truly ICT-rich and *Utopic* in terms of ICT utilization in education?

**Issue 5** – The participants were very grateful to Korea for showcasing WHAT they have to this international community, but the question remains in the participants' minds – HOW do we do it/achieve it/approximate it?

***Recommendation 1***

– Provide an English version of NEIS at least in the introductory web pages.

***Recommendation 2***

– Determine, identify and maintain reasonably demanding educational policies and curriculum.

***Recommendation 3***

– All ROK-FIT Phase II countries suggested to focus on capability-building activities and projects.

Last but not least, the lead discussant also keynoted the importance of leadership in education, leadership in learning. There was a brief presentation and explanation about SEAMEO INNOTECH's flexible learning solutions such as the Learning & Technology *Excellence in School Leadership for Southeast Asia* (LEARNTECH eXCELS), a competency-based, multi-modal, flexible learning courseware for school heads. An emerging paradigm highlighting "learning leadership" was expounded upon. From the development and validation of a Competency Framework for Southeast Asian School Heads to the delivery of adult, active learning utilizing Print-based, CD-based and Web-based modalities, technologies and learning materials, the solution was a compatible example of an application of quality teaching-learning delivery of content and medium to adult learners such as education leaders.

The issues and insights gained from this discussion will be elaborated some more in the following sections of this paper.

***Points for Improvement and Other Suggestions***

These are the other suggestions raised by the participants:

- Provide or facilitate more “hands-on” activities and practical things in a study visit program
- Provide information not only about achievements in the field/topic but also tools and mechanisms to reach desired goals
- For each participating country in a study visit program to cite areas for improvement prior the actual study visit for more engaging and fruitful discussion fitting the different contexts of each participating country
- Do follow-up country visits, return missions and more regular types of study visits in the future
- In the introductory sessions of the study visit program, activities that would be very challenging and visually stimulating and participative could be a good example of concretizing the use of ICTs, for example, participants being asked to introduce themselves in a virtual world by way of creating it and each one’s avatar in a social interaction tool like SecondLife.

## **2. Insights Gained from the Sessions**

The actual visits, presentations and discussion sessions provided opportunities for the international participants to benefit much from the experience of the Republic of Korea, as well as share the experiences, lessons and issues confronting the participating countries, enhancing capacity of participants in terms of shaping educational policies and assessing needs, and networking between institutions and persons.

A better grasp of the use of appropriate ICTs in education planning and management was a clear and steadfast outcome for this particular Study Visit Program.

Korea is replete with a lot of ICTs. From the hotel room toilet, the city streets, the navigation equipment in ordinary taxi cabs, to the u-learning classrooms, one will find digital gadgets, SAMSUNG and LG liquid display monitors and special computers! Young and old alike on the average are using ICT tools as part of their ordinary lifestyle and day-to-day living. What’s more, in education, one cannot help but think whether there is just enough or too much overload of technology for the average Korean school-age child who, at an early stage of his/her development, is being exposed early enough in the use of computing technology in entertainment and learning. Coupled with the fast-paced adult working environ/lifestyle and Korean passion for academic preparation and



excellence as manifested in their still prevalent concern for private tutorials, one cannot help but think if the children still have time to tinker with crayons and pens to draw little pictures of nature or have a meaningful chat between fathers and sons, stroll and play in the vast greens, hills and landscapes of Korea for quality family time.

The **role of technology** and **societal values** are therefore proffered as an insight-forming set of concerns after reflecting on all the sessions attended.

Inevitable advances in technology also create challenges for a moderated use of ICTs in education. National level educational planning and management should consider this in policy review and curriculum enhancement. While certain technological innovations can improve access through expanded hours and modalities of learning delivery and acquisition of a variety of more interactive and applied instructional methods, these can come at a cost and if not monitored, regulated or implemented correctly can have detrimental consequences on society and even draw national resources away from other more basic services.

Among other relevant insights to educational planning and management using ICTs in the Third Millennium, we still experience strong opinions related to the relative value of an academic education over say balanced academic and character formation, and even technical-vocational education, which is healthy for a country's steady supply of skilled, well-trained or qualified and educated workforce. While education leaders and even parents agree that there are greater education opportunities that will merit eventually greater employment opportunities for the next generations, more and more young people are becoming overly conscious of being famous, popular and rich someday while being silent about how they would potentially help build their nation and help other peoples. Korea and the participating ROK-FIT Phase II countries in this Study Visit may consider the very important aspect of shaping the right attitudes and intentions in pursuing educational and personal goals while being better and better each day in the use of ICTs in education and daily living.

### **3. Future Challenges and Development Agenda**

#### **A. Future Challenges in Using ICTs in Educational Planning and Management**

Albeit this paper examines some of the major challenges and best practice models in educational planning and management using ICTs in education and aims to reveal the links between existing standards in ICTs and models for education planning, management and leadership that may improve current practice and meet such desired standards. Through this paradigmatic analysis,

recommendations may be drawn that can assist Basic Education jurisdictions to meet objectives of improved national patrimony, economic productivity, performance and improved international competitiveness in an era of rapid economic and technological change.

There is a plethora of discussion in national and international forums about the appalling nexus between successful internationalization, globalization, massification, cross-border education, national and regional economic strength and sustainability and a nation's skilled, educated workforce. The role of Basic Education, and as a major challenge, as well as Higher or Tertiary Education in the development of a skilled and educated labour force is well researched and established and has been the flavour of numerous white papers and reports, such like the one summarized in a statement below from a recent World Bank publication:

*Tertiary education exercises a direct influence on a national productivity, which largely determines living standards and a country's ability to compete in the global economy. Tertiary education institutions support knowledge-driven economic growth strategies and poverty reduction by (a) training a qualified and adaptable labor force, including high level scientist, professionals, technicians, teachers in basic and secondary education and future government, civil service, and business leaders; (b) generating new knowledge; and (c) building the capacity to access existing stores of global knowledge and to adapt knowledge to local use. (...) Sustainable transformation and growth throughout the economy are not possible without the capacity building contribution of an innovative tertiary education system. (World Bank, 2002)*

In many regions and countries, it is the realization of this link between sustainable economic development and a well trained, qualified and educated labour force that sparks the fire in educational planning, management and leadership in Basic and Higher Education systems. Moreover, if in the Third Millennium we are building "knowledge-based economies", then it means an increasing demand for a well-educated and skilled workforce in all parts of the economy throughout a country. (HRD Canada, 2002)

Clearly, educational planning, management and leadership should not only be accentuated in Basic (preschool, primary and secondary) Education but also in Higher or Tertiary Education (including technical-vocational education) as well.

The ROK-FIT Phase II country representatives all agreed that more study visit programs, exchange missions and technical assistance be extended to their respective countries so that not only is the interest in educational planning and management utilizing ICTs is sustained, but also attract public, private and

international agencies in concerted efforts to improve the ICT infrastructure, policies and programs of the developing nations that are unfazed by the challenges posed by the Third Millennium in ultimately achieving quality education for all.

## **B. Development Agenda for Participating Countries**

The UNESCO – KEDI – KERIS and Korean MOE&HRD connections, as demonstrated in the ROK-FIT Phase II Study Visit Program, help the participating country expand its international linkages. It is singularly well placed to provide assistance in developing internationally credible benchmarks in the utilization of ICTs in education planning, management and leadership for Basic and Higher Education systems.

The experiences and networking gained from the Study Visit will certainly help in charting a specific path of development of EMIS and ICT utilization in teaching-learning processes for each participating country.

The **developmental challenges** are proposed as follows:

- the challenge of **continuous professional development** for *learning leaders* or education leaders;
- the challenge to **implement, with continuous guidance, benchmarking and even technical assistance** (funding or services), a system for improving education planning and management using ICTs that is *most appropriate, relevant, responsive, accessible, accountable and affordable*;
- the challenge to work towards attaining a **strong political commitment** on the part of a country's government **in shaping and directing pertinent policies for ICTs in education**; and
- the challenge to keep pace with technological advancements and **use technology appropriately** without compromising good tradition and culture of a nation.

## **C. Towards International Cooperation**

Probably the best outcomes of this international Study Visit are the concrete shaping of **educational linkages, benchmarks**, and the contemplation of country **strategies for continuous improvement**.

All these tend toward a healthy international cooperation between governments and institutions. The very basic value of "helping one another" can never be dismissed as an indispensable attitude in international development work. As

one Pulitzer Prize-winning author, Thomas Friedman, puts it, it is a *world flattener*.

#### **4. The Role of Korean Education in the International Society**

The passion for excellence, determination and perseverance of Korean educators and education leaders is exemplary as evidenced by their history. How they have picked up from the shambles of war and poverty to a first world level of excellence in basic and higher education through technology supporting the teaching-learning processes is a feat worthy of emulation and imitation by developing nations worldwide. Albeit the Korean Model may not necessarily be the right exact “fit” for any country inspired by it, as our Korean colleagues have adequately admonished, the quality of their education and technology leadership remains as an inspiring occupational model worth examining. The teaching profession for instance, is highly regarded and highly compensated in Korea. The Korean people’s collective effort in nation building and in improving their economy and knowledge society through education is a collective human action that is a marvel in itself. Theories of human action based on culture, such as those of Bourdieu et. al., maintain that occupational choices are defined in relationship to those in one’s social milieu (Bourdieu & Passeron, 1990). Occupational identity is hence defined and influenced by collective histories, traditions, and customs. The love for education backed by technology as exemplified by Korean educators and education leaders points out to the international community what cultural and social influences could be said to have played a major role in their rapid development in educational planning and management utilizing ICTs.

The skilled labour force, professionals and experts emerging from Korean Education will lend a steady and credible supply of “friendly diffusers” of technology and technical support to the international community’s developing nations. Prompt and willing as it is, Korean Education can also learn as well from the varied and multicultural experiences of developed, developing and less-developed countries from different regions.

It can be an effective agent of positive change in helping a diverse mix of institutions and nations become internationally respectable only if it can also maintain and further strengthen its own international profile. It needs to attract and retain international education experts from all over the world to reinforce its national staff. Academic, industry and other professional exchange agreements, secondments and appointments for visiting teaching or research fellows offer a time tested mechanism for continuous improvement and

technology diffusion or transfer. Indeed, Korean Education is a positive world force to harness in the 21<sup>st</sup> Century.

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## [Annex 1] Programme

July 10(Tues.) 08:30 – 09:30 09:30 – 10:00	<p>Move from the Hotel to KEDI</p> <p><b>Opening</b> Chair: Sung-Sang Yoo, Director, International Education Cooperation Team, KEDI</p> <p><b>Opening Address</b>  <ul style="list-style-type: none"> <li>- Hyung Yeel Koh, President, KEDI</li> <li>- Byung Hyun Lee, International Cooperation &amp; Information Technology Bureau, Ministry of Education and HRD, Korea</li> <li>- Ilyong Cheong, UNESCO</li> </ul> </p> <p><b>Introduction of the Programme and Participants</b></p>
10:00 – 10:50	<p><b>Introduction of Korean Education</b></p> <p style="text-align: right;"><i>Chair: Utak Chung, Korea National Commission for UNESCO</i></p> <ul style="list-style-type: none"> <li>- The Development Process and Current Situation of Korean Education <i>by Sang Hoon Bae, Ministry of Education and HRD, Korea</i></li> </ul>
10:50 – 11:00	Break
11:00 – 12:00	<ul style="list-style-type: none"> <li>- Development of EMIS in Korea <i>by Hyun Jeong Park, Seoul National University, Korea</i></li> <li>- ICT Development in Korean Education <i>by Young-Hwan Kim, President, Institute of APEC Collaborative Education(IACE) and Professor of Pusan National University</i></li> </ul>
12:00 – 12:30	Discussion
12:30 – 14:30	<b>Lunch</b>
14:30 – 15:50	<p><b>Visit to KERIS</b></p> <ul style="list-style-type: none"> <li>- Introduction of KERIS</li> <li>- Use of ICT in education and management and the development of National Education Information System(NEIS)</li> </ul>
15:50 – 16:30	Move
16:30 – 17:30	<p><b>Visit to MOE&amp;HRD</b></p> <p>Overview of Planning and Management Procedures at National</p>

	<p>Level in terms of the use of ICT</p> <ul style="list-style-type: none"> <li>- <i>Presentation by Seung Gwon Yoo, Digital Local Education Budget &amp; Accounting Reinvention Team, MOE&amp;HRD</i></li> </ul>
18:30 – 20:00	Welcoming Dinner hosted by President of KEDI
July 11(Wed.) 08:20 – 09:30	Move from the Hotel to School
09:30 – 11:00	<p><b>Visit to Seoul Sinhak Elementary School</b></p> <ul style="list-style-type: none"> <li>- Introduction to the use of ICT in education and management at school level</li> <li>- Observation of U-learning class and school facilities on ICT and digitalization in education</li> <li>- Meeting with the Principal of the school focusing on school administration and management</li> </ul>
11:00 – 14:00	<b>Move and Lunch</b>
14:00 – 15:30	<p><b>Visit to Incheon Buwon Middle School</b></p> <ul style="list-style-type: none"> <li>- Introduction to the use of ICT in education and management at school level, focusing on the use of NEIS / EMIS and teaching and learning using ICT</li> </ul>
15:30 – 16:10	Move
16:10 – 17:40	<p><b>Visit to Incheon Metropolitan Office of Education</b></p> <ul style="list-style-type: none"> <li>- Introduction to the use of ICT in education development, planning and management at local office level</li> <li>- The role of Office of Education in the area of collecting and managing educational statistics</li> <li>- Main educational statistics which are used for policy implementation</li> </ul>
18:30 – 20:00	Dinner
July 12(Thurs.) 09:30 – 10:30	<p><b>Synthesis paper</b> on education planning, implementation, and management issues confronting the use of ICT, Focus on ROK-FIT Phase II countries</p> <p style="text-align: right;">Pierangelo B. Alejo, Head of Flexible Learning Solutions, SEAMEO INNOTECH</p> <ul style="list-style-type: none"> <li>- Discussion</li> </ul>
10:30 – 10:50	Break
10:50 – 12:50	<p><b>Education planning, Implementation and Management through the Use of ICT</b></p> <p>Country case presentations and discussion:, Azerbaijan, , Armenia, Uzbekistan</p> <p style="text-align: right;"><i>Moderator: Eva K. Ntalami, UNESCO Nairobi Office</i></p>

12:50 – 14:30	Lunch
14:30 – 16:30	Country case presentations and discussion: Georgia , Mongolia , , Kenya <i>Moderator: Komiljon Karimov, UNESCO Tashkent Office</i>
16: 30- 16:50	Break
16:50— 17:30	Discussion <i>Moderator: Bong Gun Chung, Visiting Senior Research Fellow, KEDI</i>
July 13(Fri.) 09:00 – 10:30	Presentations and discussion on tools and models in the use of ICT in education planning and management <i>Moderator: Jon. W. Seo, Researcher, KERIS</i>  - Infrastructure and mangement of educational statistics system in Korea <i>By Chang Hwan Kim, Director-General, Center for Educational Statistics, KEDI</i>  - Discussion
10:30 – 11:00	Break
11:00 – 12:00	Discussion on field visits, issues, best practices Pierangelo B. Alejo, Head of Flexible Learning Solutions, SEAMEO INNOTECH
12:00 – 13:00	Wrap-Up  By KEDI-UNESCO
13:00 - 14:00	Farewell Lunch



## **[Annex 2] List of Participants**

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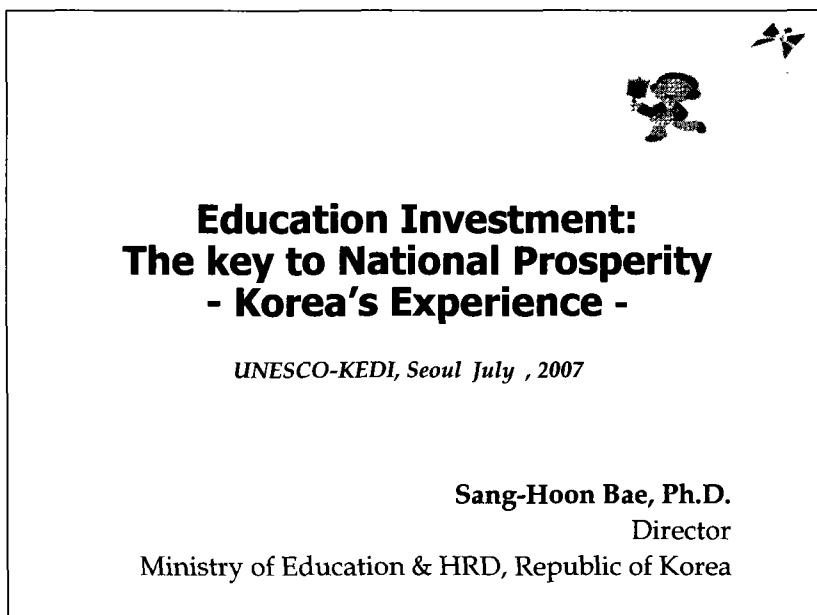
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**[Annex 3] Presentation Files**

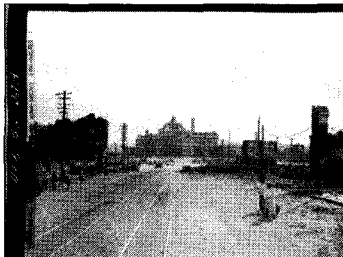
**1) Education Investment: The Key to National Prosperity, Sang-Hoon Bae**



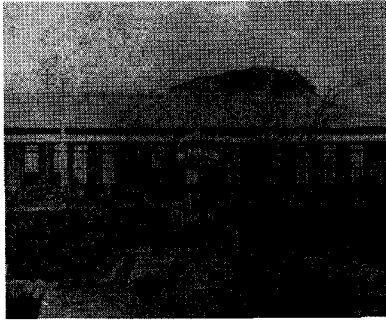
- Part I: Overview
  - ✓ Korea' Economic & Social Development
- Part II: Education Development Strategies
  - ✓ Linking Education Policies to Economic Development
  - ✓ Sequential Expansion Approach
  - ✓ From Quantitative Growth to Quality Improvement
- Part III: Challenges & Policy Directions

## **Part I : Overview Korea's Economic & Social Development**

### **Seoul: Then and Now**



## School: Then and Now



## Students: Then and Now



**Night Time Factory School  
For young female workers  
Early 1970's**

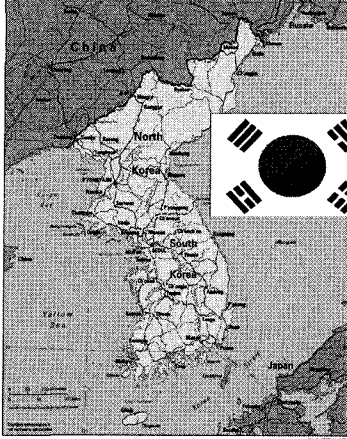


**Students in  
After-  
School  
programs**



## Korea (ROK) at a Glance

Korean Peninsula

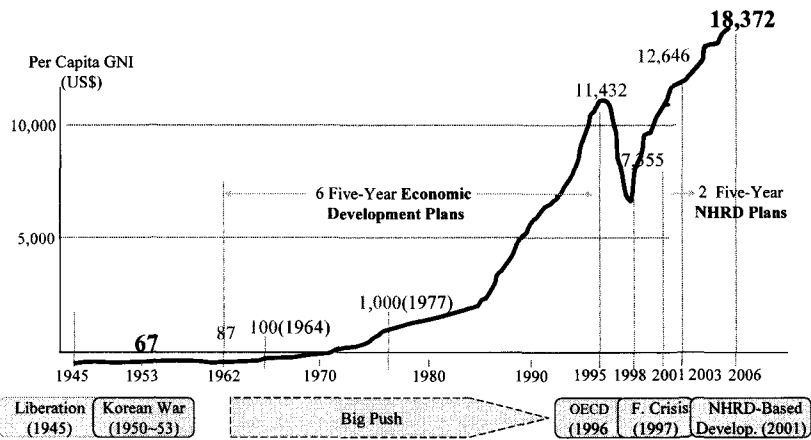


- Area: 99.6 K Km<sup>2</sup> (107<sup>th</sup>)
- Population: 49.0 Million (26<sup>th</sup>)
- GNI: US\$ 887.4 Billion (FY06)  
(GNI per capita : US\$18,372)
- Economy and ICT (World rank)
  - OECD member economy in 1996
  - Economy (11<sup>th</sup>)
  - Broadband diffusion (2<sup>nd</sup>)
  - Home PC diffusion (3<sup>rd</sup>)
  - No Oil & National gas production

## A Good Model for Developing Countries

- **Experienced from Poverty to World 12th Economy**
  - GNI per capita : US\$ 90.9 ('62) → 18,372 ('06)
- **A Model of Education–Driven National Development**
  - Economic development supported by sequential investment in education
- **Particularly, Fits for Those Countries**
  - With few natural resources, but greater dependence on human resources
    - as a driving force for national development
  - For which highly–advanced systems hardly work
  - Having a centralized governance system and cultural legacy

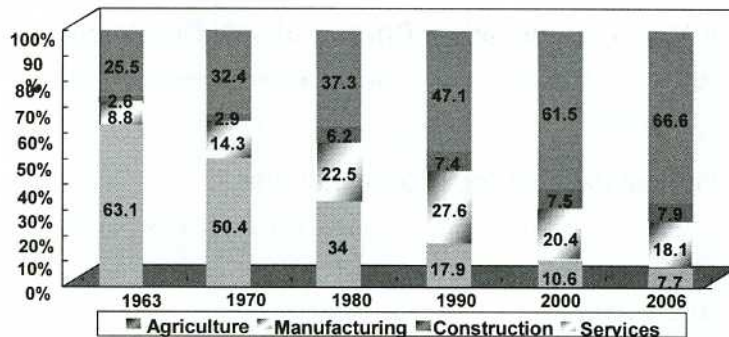
## Economic Development



Modified from Il Whan Ahn, WBI K4D, '05

## Industrial Structure by Employment

- Decreasing Labor-Intensive Industries
- Increasing Service industries



## Social Development

### ■ Human Development Index(HDI) : 26<sup>th</sup> in 2004

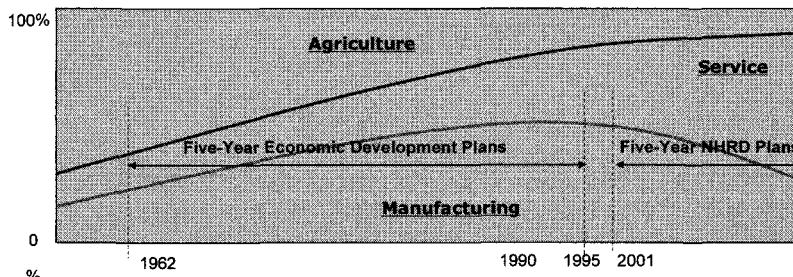
- HDI trends: 0.712('75)→0.746('80)→0.823('90)→0.89('00)→0.912('04)

※ Components of HDI: life expectancy, adult literacy, GDP per capita, education

	1970	1998	2004
Life expectancy (years)	62.6	72.6	77.3
Infant mortality rate (per 1,000 births)	43	5	5

(source : Human Development Report 2006, UNDP)

## Linking Educational Policies to Macro-Economic Development Plans



Industry : Labor-intensive	⇒	Heavy/Chemical	⇒	Knowledge-based
Labor force : Unskilled/Cheap Labor force	⇒	Skilled Labor force	⇒	Top Talent
Ed Investment : Primary/Middle	⇒	High school/Voc Tech	⇒	Higher Ed/Lifelong

## Linking Educational Policies to National Development Plans

- **5-Year Economic Development Plan (1962~1991)**
  - Government directly led planning(1962-76) : 1<sup>st</sup> ~ 3<sup>rd</sup> Plans
  - Indicative planning(1977-91) : 4<sup>th</sup> ~ 6<sup>th</sup> Plans
    - Top-down educational policies to support economic development plans and provide trained workforce
- **5-Year National HRD Plan (2001~)**
  - Coordinated approach to relate HRD to economy
    - Education policies as a key NHRD strategy in a knowledge economy

## Part II : Education Development Strategies

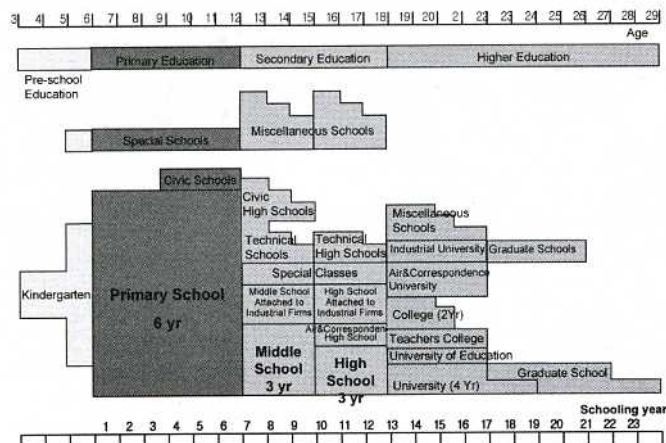


## Education Development Strategies

- **Linking Education to Economic Development**
  - Provision of manpower for businesses and industries
- **Sequential Expansion Approach**
  - Limited financial resources
  - Step-by-step approach to universal education

: primary/middle → High/Voc. Training → HE/Lifelong Learning
- **From Quantitative Growth to Quality Improvement**
  - Educational attainment to educational achievement

## School System



## Education and Economy

	Economy	Education
'60s–mid–'70s	<ul style="list-style-type: none"> <li>• Export-driven industry</li> <li>• Light manufacturing, clothing, shoes etc.</li> <li>• \$90('62) → \$602('75)</li> </ul>	<ul style="list-style-type: none"> <li>• Literacy, work ethic</li> <li>• Primary &amp; Middle school</li> <li>• Short-term teacher training</li> </ul>
Mid–'70s – mid'80s	<ul style="list-style-type: none"> <li>• Structural adjustment: <ul style="list-style-type: none"> <li>: Imitation → innovation</li> </ul> </li> <li>• Heavy &amp; chemical industries</li> <li>• \$818('76) → \$2,309('85)</li> </ul>	<ul style="list-style-type: none"> <li>• Skilled workforce</li> <li>• High school, HE (2yr)</li> <li>• Vocational ed. &amp; training</li> <li>• Teachers' colleges</li> </ul>
Mid–80s – mid'90s	<ul style="list-style-type: none"> <li>• National competitiveness</li> <li>• Knowledge-based economy</li> <li>• Auto, steel, semi-conducts, computers</li> <li>• \$2,643('86) → \$11,432('95)</li> </ul>	<ul style="list-style-type: none"> <li>• Quality improvement</li> <li>• 5.31 Education reform ('95)</li> <li>• ICT in education</li> <li>• Lifelong learning</li> </ul>
Mid'90s –present	<ul style="list-style-type: none"> <li>• Foreign currency crisis ('97)</li> <li>• Restructuring</li> <li>• Semi-conducts, auto, wireless comm.</li> <li>• \$12,197('96) → \$18,372('06)</li> </ul>	<ul style="list-style-type: none"> <li>• Quality improvement in ed.</li> <li>• MOE – MOE&amp;HRD</li> <li>• Edu-Industry Partnership</li> </ul>

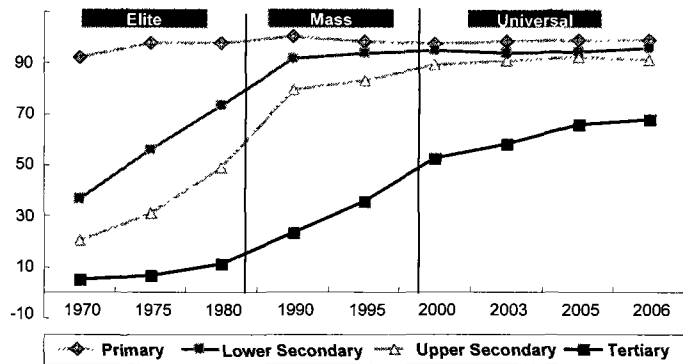
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## Quantitative Growth of Education

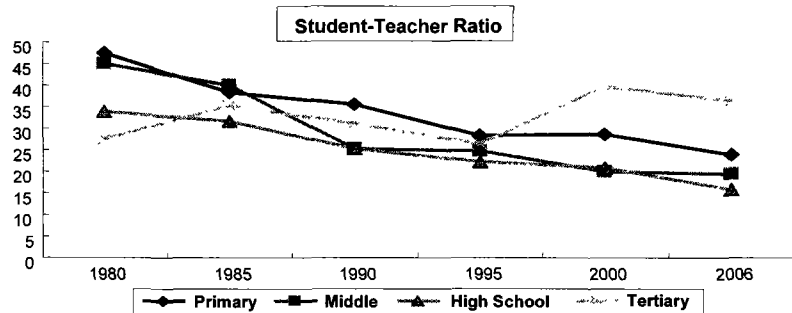
### Enrollment Trend by Education level

- Step-by-step attainment to universal education



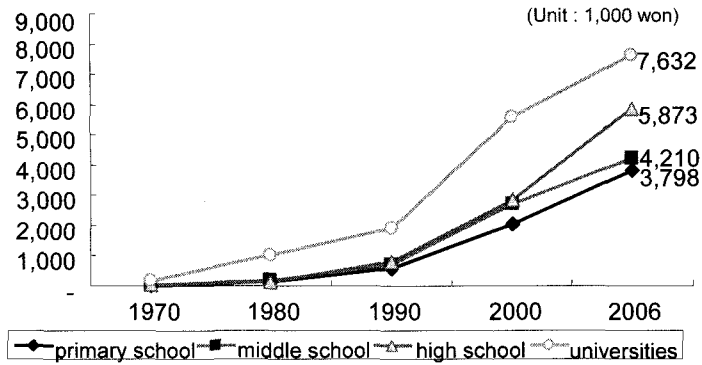
## Efforts to Improve Quality

- 1970s: Effective Use of School Facilities through Double/Multi-Shifting (Low-cost solution)
- 1990s ~: Class-size reduction



## Efforts to Improve Quality

### Public Educational Spending per Pupil



## Educational Achievement

### International Student Assessments

Rank	TIMSS 2003(8 <sup>th</sup> grade)		PISA 2003(15-yrs-old)			
	Math	Science	Math	Reading	Science	Problem Solving
1	Singapore	Singapore	HK-China	Finland	Finland	Korea
2	Korea	Taiwan	Finland	Korea	Japan	HK-China
3	HK-China	Korea	Korea	Canada	HK-China	Finland
4	Taiwan	HK-China	Netherlands	Australia	Korea	Japan
:	:	:	:	:	:	:

✓TIMSS: Trends in International Mathematics and Science Study (45 countries)

✓PISA: Program for International Student Assessment (41countries)

## **Part III : Challenges & Policy Directions**

### **Increasing Demands for Lifelong Learning**

#### **☛ Changing Population Structure**

- Ageing population and low birth-rate

#### **☛ Economy and Labor Market**

- Increasing global competition (FTAs) & worsening job security
- Rapid transition to a knowledge-based economy

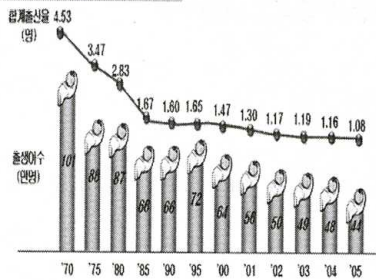
#### **☛ Society**

- Polarization and widening income inequality
- Increasing emphasis on social welfare

## Low Birth Rate & Ageing Pop.

### Low Birth Rate

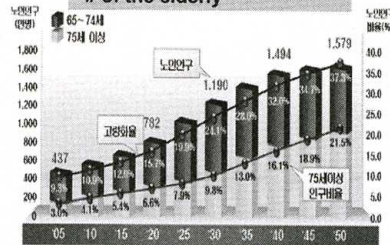
Total birth-rate  
# of birth



\* 자료: 통계청, 「인구통계월보」, 각 연도

### Ageing

Proportion, over 65 and 75  
# of the elderly



\* 자료: 통계청, 「중장기인구변동추계」, 2006

통계청, 2006 인구주택총조사 인구부문 분석결과집계, 2006

## SWOT Surrounding Education System

### Strengths

- Strong K-12 foundation
- Education enthusiasm
- Parents' supports for education

### Weaknesses

- Loose linkage between ed. and labor market
- Weak alignment among ed policies

### Opportunity

- Global competition (FTA)
- Growing interest of companies on HRD
- Emphasis on National HRD

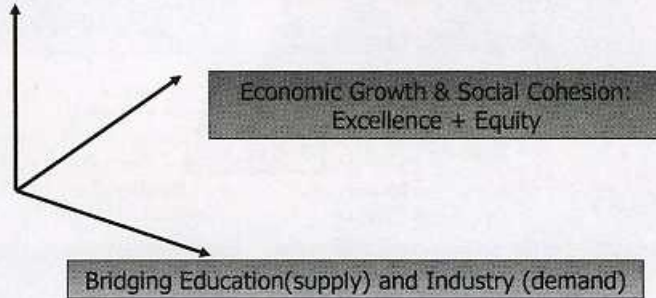
### Threats

- Changing population structure
- Polarization in education investment
- On-going debate between Excellence vs. Equity

## Strategies to Overcome Challenges

### ■ **Balanced Development of Lifelong Learning through National HRD Approach**

Balanced Investment: Pre-K, K-12, HE & Adult Ed.



## Policy Direction 1: National HRD Initiatives

### ■ **Reorganization of MOE to MOE&HRD**

- Knowledge and Talents as a key for national competitiveness
- NHRD as a means to build a lifelong learning society
- 5-Year National HRD Plan (since 2001), covering early childhood through adult education
- Bridging policies between supply and demand sides

### ■ **A better NHRD governance**

- The National Human Resources Committee chaired by the President
- Strengthening cooperation among line ministries related NHRD policies
- Conducting NHRD policy formulation and evaluation

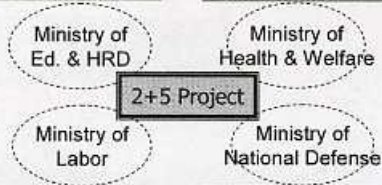
## An Example of National HRD Policy

### ❖ 2+5 Project:

To Help People Start Working Two Years Earlier and Retire Five Years Later

- ✓ Revitalizing voc. high schools
- ✓ Promoting LLL for employees
- ✓ Innovating university education

- ✓ Building a pension system to extend retirement age
- ✓ Increasing health investment for HR



- ✓ Flexibility in employment patterns
- ✓ Active labor market policy

- ✓ Reducing the military service period

## Policy Direction 2: Beyond K-12

- **The End of a K-12-driven Growth Strategy in a Knowledge Econ.**
  - Ed. policy expanded from K-12 to Lifelong learning of people
- **Increase in Investment in Pre-K Education**
  - Early intervention to narrow achievement gap at an early stage
  - Provision of free pre-school education for 3 ~5-yr-olds
    - ❖ Step by step: from 5-year-olds('00) to 3~4-year-olds of the disadvantaged ('04~)
- **Strategic Investment in Higher Education**
  - BK21 to develop world class research universities and global talents
    - ❖ BK21 (Brain Korea 21) :US\$ 0.3 billion per year ('06 ~'12)
  - NURI to bridge local universities and industries
    - ❖ NURI (New University for Regional Innovation) : US\$ 1.2 billion ('04 ~'08)
- **Cyber Education for Under-developed Adults' Lifelong Learning**



## Policy Direction 3: Pursuing Growth and Welfare

- **Vision 2030, a Long-term National Growth Strategy**
  - Sustainable development and social cohesion through educational equity

- **Education Safety Net**
  - Edu-Welfare Zones: mentoring, cultural activities, counseling, etc.
  - Government's tuition support for K-12 students

- **Quality After-school Programs**
  - Providing quality programs to disadvantaged students
  - Schools as regional centers of lifelong learning



## Policy Direction 4: Lifelong Learning Infrastructure

- **Strengthening Diverse Lifelong Learning Institutions**
  - The central lifelong education center (1), regional lifelong education information centers (16), local lifelong education centers (240)
  - 'Lifelong Education City' (Lifelong Education Festival)
    - ❖ 3 ('01) ⇒ 11 ('03) ⇒ 33 ('05) ⇒ 57 ('06) ⇒ 100 ('10)
- **Expanding Higher Education Opportunities for Adult learners**
  - The Credit Bank System (since 1999)
    - ❖ 76,833 received 4-year degrees, 210,500 registered
  - The Self-Study Program (since 1990)
    - ❖ 9,907 received 4-year degrees, 58,443 registered
  - Cyber universities (since 2001)
    - ❖ 15 universities, 2 colleges / 68 thousand students registered

## Lessons From Korea

- The political commitment was critical
- The centralization of various development decisions at the initial stage was effective
- The orchestration of a variety of policies within a solid framework was asked
- The timing and sequence of policy choices were critical
- Educational excellence and equity can be achieved together

**Thank you very much!**

*bsh@moe.go.kr*

## 2) Development of EMIS in Korea, *Hyun-Jeong Park*

# Development of EMIS in Korea

Hyun-Jeong Park  
Seoul National University  
hjp@snu.ac.kr

## Contents

- 1 Definition and Functions of EMIS
- 2 History of ESS
- 3 History of NEIS
- 4 Lessons form Korean Case

### Definition

- ❖ EMIS (Educational Management Information System) is the information processing for educational system management.
- ❖ Here the processing covers providing information about the current status and predictable future so that the stakeholders in the system could encounter with the possible problems to solve, return it to the status-quo, and develop it toward the desirable future.

## **1. Definition and Functions of EMIS**

### Functions

1. Providing information for operating current affairs
2. Providing information for educational policy making
3. Providing information for educational research
4. Providing information for producing social indicators

## **1. Definition and Functions of EMIS**

**Function1: Providing information for operating current affairs**

- ☐ Generally descriptive data information
- ☐ Providing administrators with the most accurate and up-to-date information of the current situation
- ☐ Assisting decision-making at the operational level of daily work

## **1. Definition and Functions of EMIS**

**Function 2: Providing information for educational policy making**

- ☐ Educational decision making is a decision making process of the educational policy.
- ☐ Providing the policy makers with the most credible information related to the policy issues .

## **1. Definition and Functions of EMIS**

### **Function 3: Providing information for educational research**

- ☐ Inevitable elements for the scientific research on educational phenomena which is to understand and theorize the behavior patterns of educational system.
- ☐ Developmental stage of disciplinary research is the indicator of the stage of the society, so is the stage of information and statistical data processing system.

## **1. Definition and Functions of EMIS**

### **Function 4: Providing information for producing social indicators**

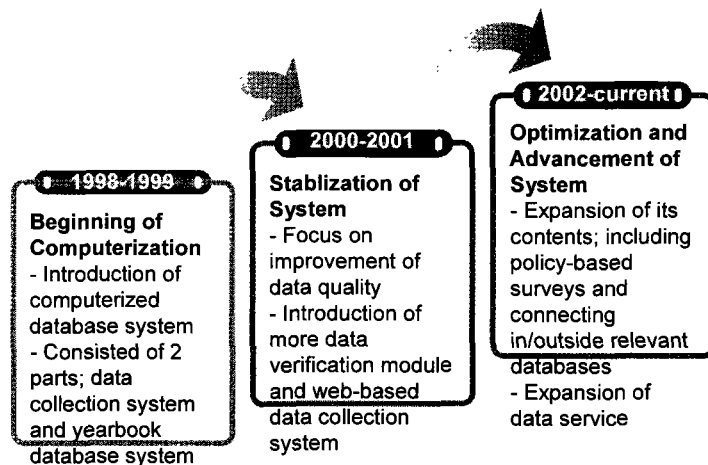
- ☐ Indicator is the composite information by translating the complex phenomena of the current society by using the basic statistical data, such as a per capita GDP or price index.
- ☐ Educational indicator such as the class size, teacher-student ratio or unit cost of education reflect the quality level of educational system as well as the level of educational invest of the country.

## 1. Definition and Functions of EMIS

EMIS in Korea

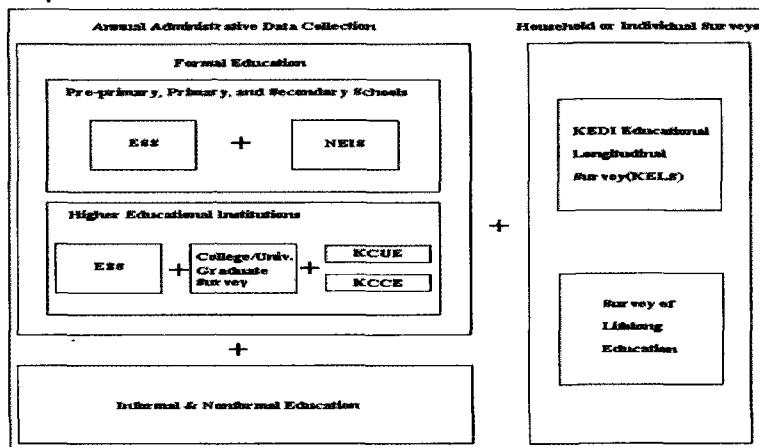
1. Educational Statistics System (ESS)
2. National Education Information System (NEIS)

## 2. History of ESS



## 2. History of ESS

### Expansion of Contents of ESS



## 2. History of ESS

### Expansion of Data Service

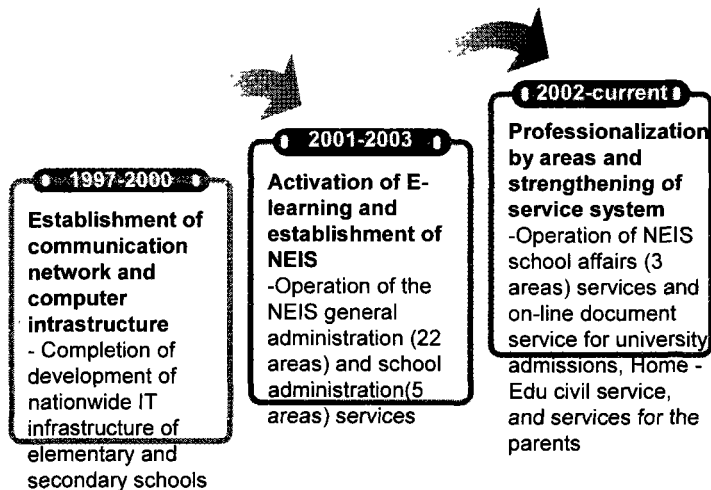
- ❑ Publication of statistical yearbook of education
- ⇒ Publication of wide range of publications, such as reports covering the analysis of trends and policy implications from the data, brief statistical handbooks and so on
- ⇒ Construction of a website which offers one-stop service for the statistical needs for education. This web site tries to offer a tailored service for individuals such as policy-makers and researchers



### 3. History of NEIS

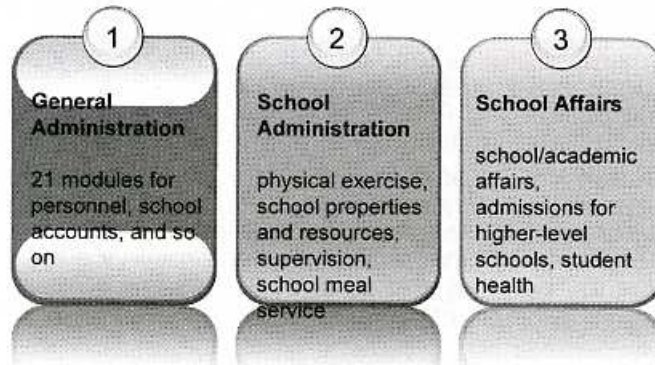
- ❑ The National Education Information System (NEIS) is an integrated system designed to provide access to all educational information by connecting all elementary and secondary schools, the Ministry of Education & Human Resources Development, 16 Metropolitan and Provincial Offices of Education and their affiliated institutions through the Internet.
- ❑ Through NEIS, Korea strives to enhance the efficiency of general education administration, improve the work environment for teachers, and provide a new educational administration information service for students, parents, and other users.

### 3. History of NEIS



### 3. History of NEIS

#### Elements of NEIS



### 4. Lessons from Korean Case

#### Lesson 1: Present is important

- ☐ The most and the first is the accurate and sophisticated analysis of present work and information flow.
- ☐ Electronic technology is just one thing.
- ☐ Electronic processing can be only successful under the condition that the present work flow has been well defined and standardized.
- ☐ Those who know the information flow of educational data and feel the necessity of educational information most seriously should be involved in the system building.

#### **4. Lessons from Korean Case**

##### **Lesson 2: Fairness of information**

- ☐ The second lesson is the fairness of information sharing just as the fair trading in the market.
- ☐ In the processor of EMIS building, the most fundamental factor is the accuracy of the first producer and provider of the raw data.

#### **4. Lessons from Korean Case**

##### **Lesson 3: Never defined**

- ☐ The third is the lesson that the final picture of the system is never defined and known in the beginning. It is not the pre-defined set but the becoming and transforming.
- ☐ Too much rigid and complete goal setting is the biggest barrier.
- ☐ Therefore it is most important to recognize all the limitation and gaps toward the goal and endure until it grows little by little like as a child growing.


#### **4. Lessons from Korean Case**

##### **Lesson 4: Stabilization the first**

- ☐ The fourth, the stabilization of the present system is more important than the development of new system.
- ☐ It is just like to wait until the child grows.

**Thank You !**

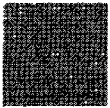

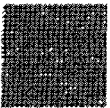


### 3) ICT Development in Korean Education, *YoungHwan Kim*




## ICT Development in Korean Education


*YoungHwan Kim, Ph. D.*


- Professor, Pusan National University, Dept of Education
- President, Institute of APEC Collaborative Education (IACE)






Institute of APEC Collaborative Education








## Introduction

### Korean Economic Development



Advanced Implementation of ICT in Korean education


- Korean Students' self-efficacy using ICT in learning - 71.1% (2005)  
Average of OECD member economies - 64.2%
- Using ICT for students' systemic learning- second rank to Finland (2003)



### Process of ICT development

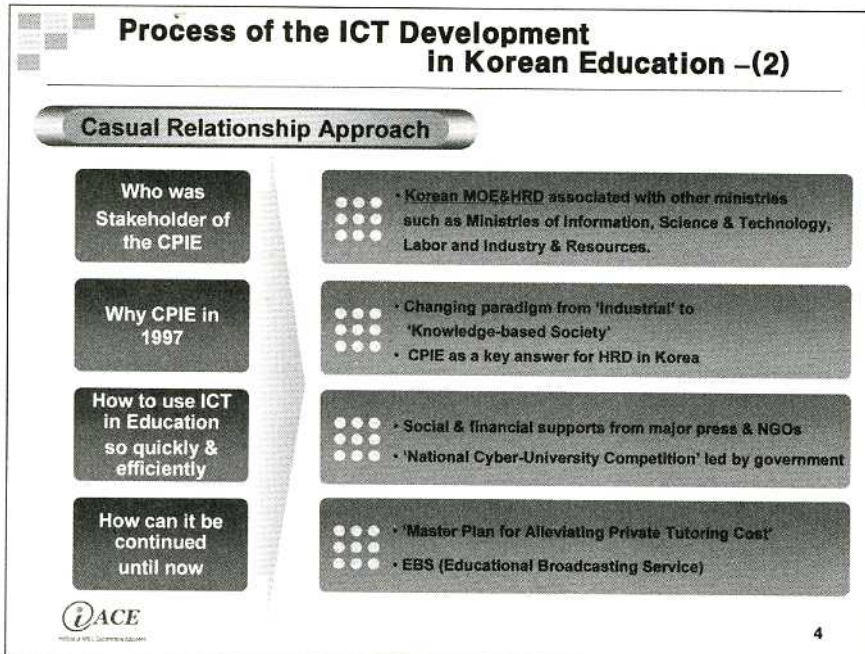
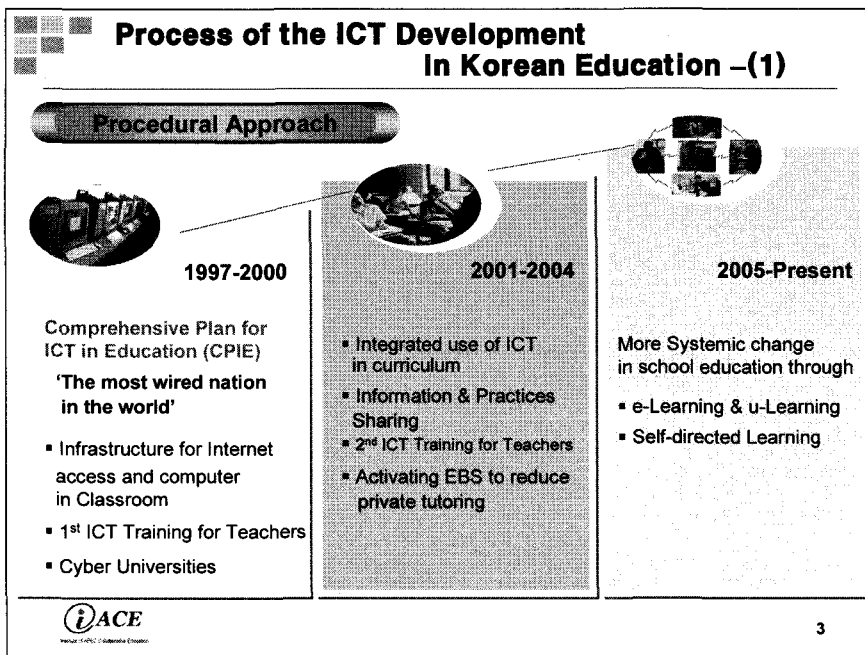
### Role Of ICT

### Future Issues For Korean e-Learning



Institute of APEC Collaborative Education

2



## Role of ICT in Korean Educational Development

### Early Stage(1995~2000)

- ICT as a goal itself
- Power for gathering various resources from the press, government, parents, etc.



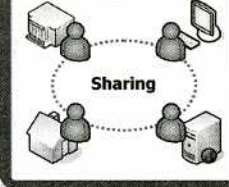
### Second Stage(2001~2004)

- Methodology for gathering & distributing educational resources
- Guardian of establishing teachers' on-line communities (Edunet etc)



### Third Stage(2005~)

- Supporter for individual level learning activities (UCC)
- Less centralized educational policies by sharing



Developmental process in Korean Education



5

## Issues for the future Korean education with e-Learning

- 1 Considering multiple paradigms and methodologies for future education  
: economic + psychological + social + etc..
- 2 Global societies with volunteer activities  
: ALCoB Internet Volunteers (AIV) through ICT
- 3 Complete activities in the cyber space with direct experience  
: e-Learning / u-Learning combined with personal (face-to-face) activities
- 4 Building alternative school in nature supported by mobile technology  
: 'Edutainment Park (or EduPark)'
- 5 Human-centered & value-centered school education  
: Emphasizing ethical & moral education than consumption-centered lifestyle
- 6 Making a network among various forms of education service systems  
: Establishing spaces for educational discourse on-line & off-line
- 7 Sharing information, ideas, belief and system for public education  
: 'EDUNET'



6



## **Ph. D. YoungHwan Kim**

- Coordinator, APEC Education Network (EDNET)
- Professor, Pusan National University, Dept of Education
- President, Institute of APEC Collaborative Education (IACE)

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- M.P: 010-4754-0838

# **Thank You!**





- 4) Tools and Models in the use of ICT in education planning and management, *Chang Hwan Kim*

## **Tools and Models In the use of ICT In education Planning and management**

**Dr. Chang Hwan Kim**

**(Director General of Center for Educational Statistics, KEDI)**

### **I . Education Statistics in Korea**

### **II . The Use of ICT in Education Statistics**

- 1. Data Collection**
- 2. Data Dissemination (Data Service)**

### **III . Education Statistics and Education Planning**

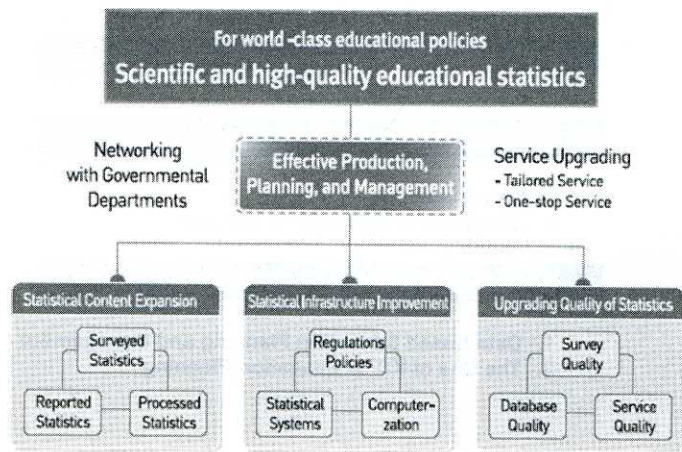
- 1. Data Based Education Planning and Management**
- 2. The Use of ICT in Education Planning**

# I . Education Statistics in Korea



# I . Education Statistics in Korea

## 1. Vision



# 1 . Education Statistics in Korea

## 2. Mission

- To Produce high-quality and reliable statistics
- To Provide research data in a scientific manner
- To always improve on client-centered service

# 1 . Education Statistics in Korea

## 3. Primary Functions & Affairs



- Establishment of Short-term/long-term planning on educational statistics
- Support for inter or intra institutional cooperation for national educational statistics
- Cooperation with institutions which produce educational statistics
- Research for policy making on educational statistics



Longitudinal survey of education, Carrying out polls on education, Surveys on lifelong learners, Basic educational statistics, Higher educational statistics, Lifelong educational Statistics, School to work transition statistics, Educational policy statistics, Survey on key educational statistics e.g. on HRD

# 1 . Education Statistics in Korea

## 3. Primary Functions & Affairs



These are the kinds of Analysis we perform:  
Educational statistic analysis, Analysis on educational policy statistics, Education projection statistics, Statistic-related publications and distribution



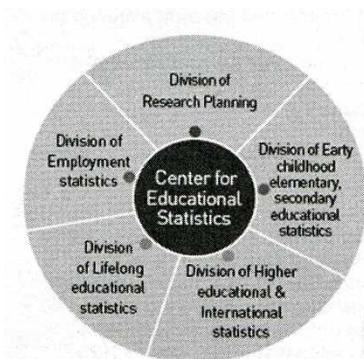
Processing of educational statistics and services  
Operation of webpage services and call center



Cooperation with international organization such as OECD, UNESCO, APEC  
The development and publication of international education indicators

# 1 . Education Statistics in Korea

## 4. Organization



- Division of Research Planning
  - Planning
  - Research
  - Networking with educational institutions
- Division of Early childhood elementary, secondary educational statistics
  - Survey on early childhood, elementary, secondary educational statistics
  - Operation of call center
  - Management of webpage
- Division of Higher educational & International statistics
  - Survey on higher educational statistics
  - Operation of higher educational statistical systems
  - International statistics
- Division of Lifelong educational statistics
  - Survey on higher educational statistics
  - Inquiry of lifelong learners
  - Operation of lifelong educational statistical systems
- Division of Employment statistics
  - Survey on employment statistics
  - Linking analysis of employment statistics
  - Operation of employment statistical systems

# I . Education Statistics in Korea

## 5. Key Publications

- **Statistical yearbook of education:** a comprehensive report on national educational statistics
- **Report of analysis on vital educational statistics:** trends and implications gathered from the statistics
- **Brief Statistics on Korean education (Korea and English version)**  
: a handbook of essential educational statistics
- **Statistical yearbook for employment:** employment statistics of higher education graduates
- **Report of analysis on employment statistics:** trend and implications of the key employment statistics
- **Statistical yearbook of lifelong education:** a statistical report on lifelong education
- **Edited report of (Education at a Glance OECD Indicators)**
- **Translated report of (Education Policy Analysis)**
- **Education human resources in Korea**  
: a report on various indicators of HRD such as socioeconomic backgrounds, infrastructure, development, implementation, and utilization of HRD

# I . Education Statistics in Korea

## 6. Education Statistical Service



Only Providing in Korean, English version under building <http://cesi.kedi.re.kr>

## **II . The Use of ICT in Education Statistics**

### **Data Collection**

#### **1. Computer (CD) used Survey**

- 1) Purpose
- 2) Overview
- 3) Data Collection Working Flow
- 4) Educational Statistics System
- 5) Contents of Collected Data

#### **2. Internet Survey**

### **Data Dissemination (Data Service)**

eg. KEDI/CESI Homepage

## **II -1. Data Collection- Computer (CD) used Survey**

### **1. Purpose**

- Provide basic statistical data for framing educational policy and creating fundamental education research
- To do that, the research takes counts of students, teachers, facilities, funding and others for every school and academic institute and all educational administrations for all the cities and district

## **II -1. Data Collection- Computer (CD) used Survey**

### **2. Overview- History of Statistics System**

- 1997 : Educational Statistics service was transferred KEDI from KISE(Korea Institute of curriculum & evaluation)
- 1998 : Data Collection System using Computer system was designed and operated by KEDI
- 2003 : Because of changing curriculum, Data Collection System was upgraded.

## **II -1. Data Collection- Computer (CD) used Survey**

### **2. Overview- Educational System in Korea**

<b>AGE</b>	<b>Educational System</b>
<b>Under 8</b>	<b>Kindergarten</b>
<b>8-13</b>	<b>Elementary School</b>
<b>14-16</b>	<b>Junior High School</b>
<b>17-19</b>	<b>Senior High School</b>
<b>Over 20</b>	<b>College, University</b>

## **II -1. Data Collection- Computer (CD) used Survey**

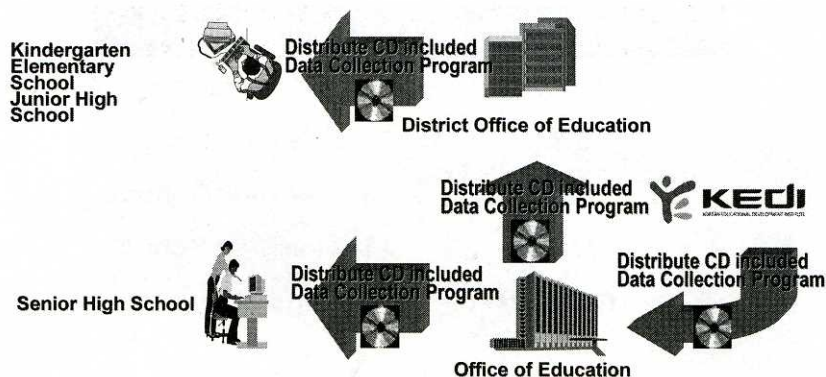
### **2. Overview- Structure of educational administration**

- **MOE : Ministry of Education and Human resources development**
- **16 Offices of Education**
  - **Jurisdiction over Senior high schools and District Offices**
- **180 District Offices of Education**
  - **Jurisdiction over kindergarten, elementary and junior high schools**

## **II -1. Data Collection- Computer (CD) used Survey**

### **3. Data Collection Working Flow**

- **Distribute The Data Collection Program**

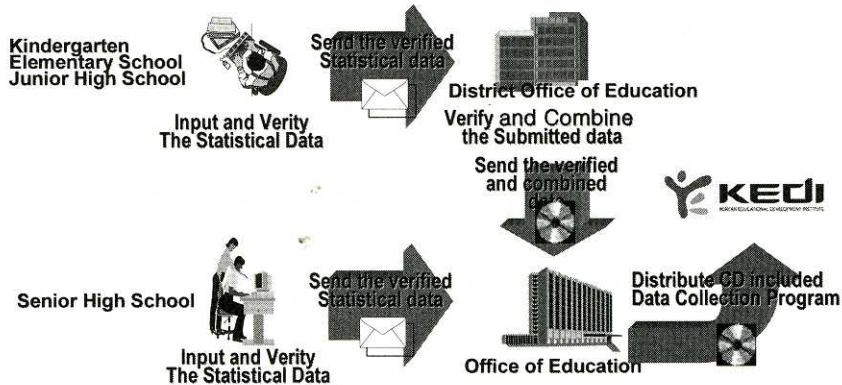




## II -1. Data Collection- Computer (CD) used Survey

### 3. Data Collection Working Flow

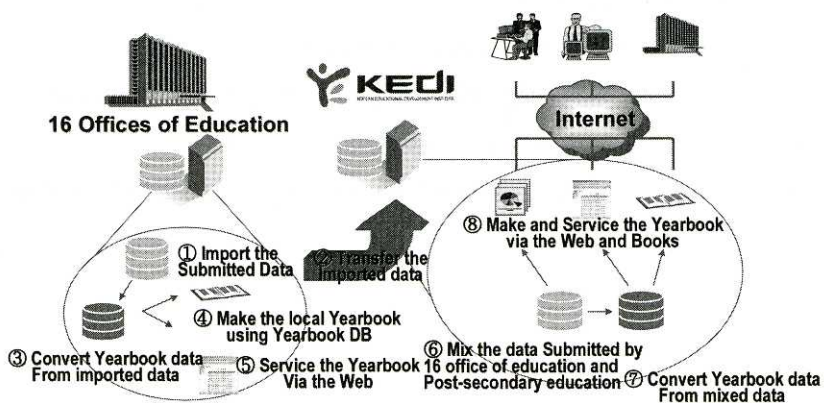
- Receive The input Data of April 1st



## II -1. Data Collection- Computer (CD) used Survey

### 3. Data Collection Working Flow

- Making the Statistical Yearbook



## **II -1. Data Collection- Computer (CD) used Survey**

### **4. Educational Statistics System**

#### **▪ Separated at 2 part**

##### **• Data Input & Import System**

- ✓ Using at school, District and local office of education
- ✓ Input, Verify and Import the collected data
- ✓ Operate on personal computer with no regard to network
- ✓ However, To import, network is necessary

## **II -1. Data Collection- Computer (CD) used Survey**

### **4. Educational Statistics System**

#### **▪ Separated at 2 part**

##### **• Education Yearbook System**

- ✓ Being used to make yearbook and local yearbook
- ✓ Converting raw data into yearbook data
- ✓ To operate, Server(Unix) and Client(PC) is necessary

## **II -1. Data Collection- Computer (CD) used Survey**

### **5. Contents of Collected Data**

#### **▪ Information of school**

- **Basic Information**
  - ✓ School name, address, telephone number
- **Foundation information of school**
  - ✓ The Present condition of Foundation Form(Public or Private), juridical person and so on
- **Fluctuation of school**

## **II -1. Data Collection- Computer (CD) used Survey**

### **5. Contents of Collected Data**

#### **▪ Information of Teacher**

- **Basic information of Teacher**
  - ✓ Teacher name, Age, Status, ...
- **Experience information**
- **Certification information**
- **Training information**
- **Payment grade information**
- **Fluctuation information**

## **II -1. Data Collection- Computer (CD) used Survey**

### **5. Contents of Collected Data**

#### **▪ Information of Student**

- Collect aggregation data, not raw data
- The number of Classes and Students
- The number of Admissions
- The number of Graduates, employees and advancements

## **II -1. Data Collection- Computer (CD) used Survey**

### **5. Contents of Collected Data**

#### **▪ Information of facilities**

- Area status of School
- Buildings status of School
- Energy usage status of School
- Cool and heating status of school

## **II -1. Data Collection- Computer (CD) used Survey**

### **5. Contents of Collected Data**

#### **▪ Information of foundation**

- Budgets & Balance
- Expenditure status
- Revenue & expenditure of local education budget

## **II . The Use of ICT in Education Statistics**

### **Data Collection**

#### **1. Computer (CD) used Survey**

#### **2. Internet Survey**

- 1) History
- 2) Overview
- 3) Process & Method
- 4) System Architecture
- 4) Products

### **Data Dissemination (Data Service)**

eg. KEDI/CESI Homepage

## **II -1. Data Collection- Internet Survey**

### **1. History**

#### **1. Pre-computerization (1963~1997)**

Worked manually

Charged by the National Board of Educational Evaluation  
(Korea  
Institute of Curriculum & Evaluation, current)

#### **2. Beginning of Computerization (1998~1999)**

Introduced computerized system for survey & analyzing  
C/S based off-line system environment

## **II -1. Data Collection- Internet Survey**

### **1. History**

#### **3. System Stabilization (2000~2001)**

Ensured reliability, validity and integrity of data, and accuracy of analyses.

Introduced the Web-based on-line system (partially)

#### **4. Establishing Advanced System (2002~current)**

Established the Web-based on-line system

System integration: related systems in KEDI & other organizations.

Implemented SOD (Statistics on Demand) service

Implemented forecasting system for statistical information of National Human Resources

## **II -1. Data Collection- Internet Survey**

### **2. Overview**

#### **▪ Purpose**

**To make statistical information available for policy decision-making and educational researches**

## **II -1. Data Collection- Internet Survey**

### **2. Overview**

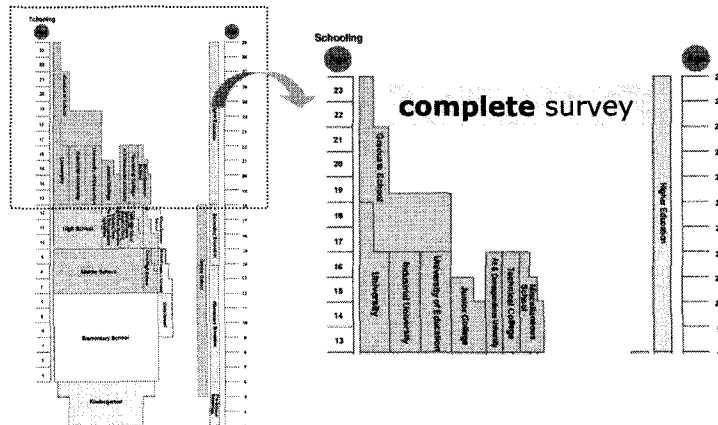
#### **▪ The legal base**

- Presidential decree (44-3, No. 18594), the commission of administrative authority
- Instructions of the Ministry of Education & Human Resources Development (No. 620), collecting education statistical data

## II -1. Data Collection- Internet Survey

### 2. Overview

#### ■ Target of Survey (1)



## II -1. Data Collection- Internet Survey

### 2. Overview

#### ■ Target of Survey (2)

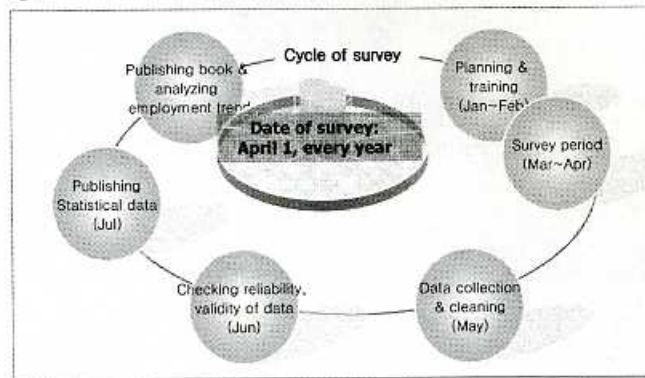
- The whole institutes of higher education that are authorized by MOE in Korea
  - University (193 sch.)
  - Junior College (160 sch.)
  - University of Education (12 sch.)
  - Air & Correspondence University (1 sch.)
  - Industrial University (18 sch.)
  - Technical College (1 sch.)
  - Cyber College & University (17 sch.)
  - College in the Company (1 sch.)
  - Miscellaneous School (5 sch.)
  - Graduate School (1022 sch.)
  - Graduate School College (34 sch.)
- Higher education institutions for special purposes are excluded (e.g., National Police College, Military Academy, and so on)



## II -1. Data Collection- Internet Survey

### 2. Overview

#### ■ Cycle of survey



## II -1. Data Collection- Internet Survey

### 3. Process & Method

#### ■ Survey Area: School Information

- Location
- Type of school
- Established date
- Manager responsible for inputting data
- Etc. 20 items totally

## **II -1. Data Collection- Internet Survey**

### **3. Process & Method**

#### **▪ Survey Area: Study Subject & Department**

- Subject name
- Department name
- Academic Field

## **II -1. Data Collection- Internet Survey**

### **3. Process & Method**

#### **▪ Survey Area: Student**

- Enrollment (Students enrolled & students on temporary leave)
- Number of Students by Age & Gender
- Number of Freshman by Age & Gender
- Number of Graduates by Age & Gender
- Graduates by Employment & Advancement
- Graduates who continued to Higher schooling by institutions
- Foreign Students
- Students Supported by scholarship & Tuition Fee Exemption
- Etc. 16 domains, 73 items totally

## **II -1. Data Collection- Internet Survey**

### **3. Process & Method**

#### **▪ Survey Area: Faculty**

- Faculty Member Lists
- Faculty Members & Assistants
- Foreign Faculty Members by Nationality
- Clerical Staffs
- etc. 5 domains, 49 items totally

## **II -1. Data Collection- Internet Survey**

### **3. Process & Method**

#### **▪ Survey Area: Facility**

- School site
- Building
- Library
- Computers in school
- Etc. 6 domains, 195 items totally

## **II -1. Data Collection- Internet Survey**

### **3. Process & Method**

#### **▪ Survey Area: Finance**

- Budget & settled accounts of school foundation
- Revenues & expenditure of school supporting associations budget
- Annual tuition fees
- Budget & settled accounts for operation of funds in private higher education institutions
- Etc. 6 domains, 112 items totally

## **II -1. Data Collection- Internet Survey**

### **3. Process & Method**

#### **▪ Survey Area: Role (1)**

- The KEDI administrator
  - Master architect of system & operation for survey
  - Management code (school, department or study subject, ...)
- The KEDI operators
  - Maintaining the survey system
  - Management master manager for each school

## II -1. Data Collection- Internet Survey

### 3. Process & Method

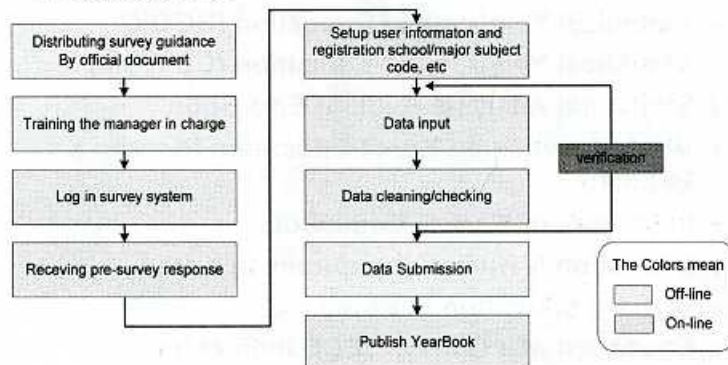
#### ▪ Survey Area: Role (2)

- The manager responsible for inputting data
  - Management manager for each part
- The chief officers
  - Accessing data of their schools

## II -1. Data Collection- Internet Survey

### 3. Process & Method

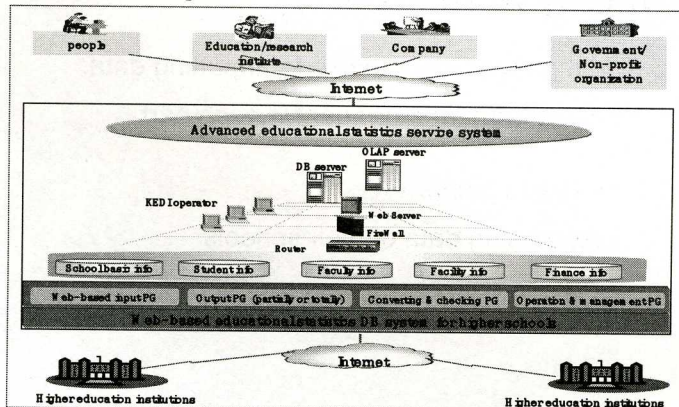
#### ▪ Procedure



## II -1. Data Collection- Internet Survey

### 4. System Architecture

#### ■ Overall System structure



## II -1. Data Collection- Internet Survey

### 5. Products

#### ■ Publication (every year)

- Statistical Yearbook of Education (BOOK)
- Statistical Yearbook of Education (CD-ROM)
- Statistical Analysis Book of Education
- Brief Statistics on Korea Education (Korean & English)
- Indicators of Korean Education
- Education & Human Resources in Korea
- Tertiary Education in Korea
- Education at a Glance-OECD Indicators

## **II. The Use of ICT in Education Statistics**

### **Data Collection**

- 1. Computer (CD) used Survey**
- 2. Internet Survey**

### **Data Dissemination (Data Service)**

eg. KEDI/CESI Homepage

## **II -2. Data Dissemination (Data Service)**

eg. KEDI/CESI Homepage

### III. Education Statistics and Education Planning

#### Data Based Education Planning and management

1. Significant Improvement of Educational Condition
2. Generalization of Higher Education
3. The State of Industry-Academia Cooperation
4. The Number of Foreign Students
5. Opening the Era of Lifelong Learning for all Citizens
6. Participation Rate in Lifelong Learning
7. Strengthening Educational Welfare Policy to Secure the Right to Education for the Underprivileged
8. Special Education Cost per capita
9. The State of Student Loan

#### The Use of ICT in Education Planning

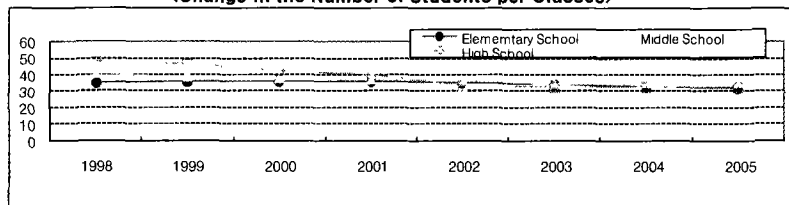
eg. KEDI/CESI Homepage

#### III-1. Data Based Education Planning and Management

##### 1. Significant Improvement of Educational Condition

- Sharp Reduction in the Number of Students per Class by Completing 7.20 Educational Condition Improvement Project('04)
- Input \11.5 trillion during '01 ~ '04, Establish 1,130 schools, Increase 14,678 classes

**<Change in the Number of Students per Classes>**



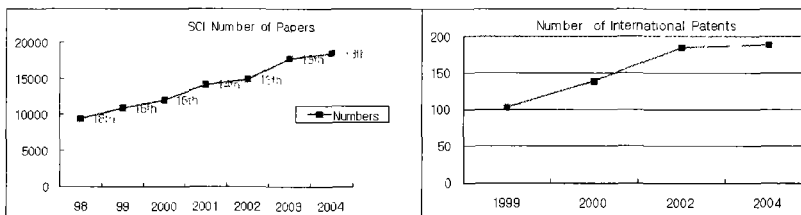
- Internet Connection in Schools Nationwide, jump to e-learning leading country(world 5<sup>th</sup> in preparation, '03)
- Introduce direct election of superintendent and educational committee members and convert education committee to provincial permanent committee by Amending Law on Local Educational Autonomy('06. 12)
- The way to expand local educational budget
  - ※ Local education budget grant rate 19.4% → 20.0%('08)



### III-1. Data Based Education Planning and Management

#### 2. Generalization of Higher Education

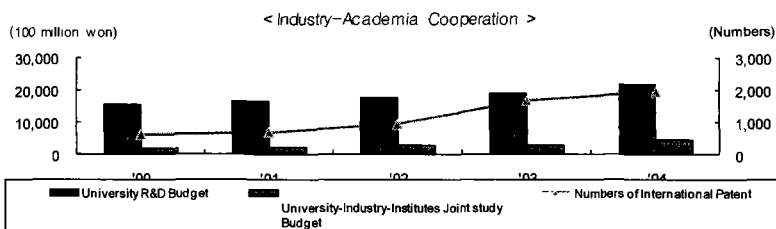
- Generalization of higher education by achieving **world's highest level of university entrance rate**(82%)
  - ※ University Entrance Rate : 27.2%('80) → 68%('00) → 82.1%('06)
  - ※ The percentage of school attendance in 15-19('06): Korea 85.2%, USA 76.5%, OECD average 80.5%
- Making the effect on **enhancing research ability** of university prominent
- Successful completion of the **first stage of BK21 project**('99 ~ '05, 11,340 billion) for training high level human resource and promotion of the **second stage of BK21 project**('06 ~ '12, 12,030 billion)
  - ※ The number of papers published in SCI journals and the ranking of Korea : 9,444(18<sup>th</sup>, '98) → 12,013(16<sup>th</sup>, '00) → 23,515(12<sup>th</sup>, '05)
  - ※ The number of the first stage BK21 Science & Technology International Patents: 103('99) → 198('05)



### III-1. Data Based Education Planning and Management

#### 3. The State of Industry-Academia Cooperation

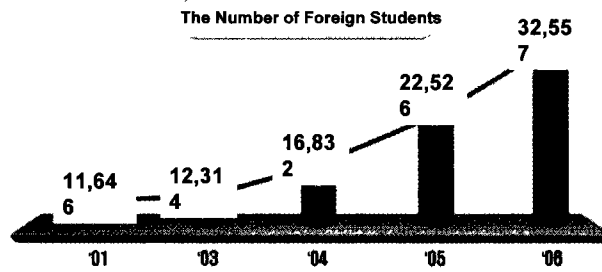
- Establish a new Industry-academia cooperation system to enhance appropriateness of university education for industry
- Introducing **School Enterprises**('04), and **Industry-academia cooperation foundation**('04) by amending Law on Promotion of Industrial Education and Industry-academia cooperation('03)
  - ※ School Enterprises(13 high schools, 37 universities), Industry-academia cooperation foundation(333, 93%, '05), Industry-academia cooperation Universities(23)



### III-1. Data Based Education Planning and Management

#### 4. The Number of Foreign Students

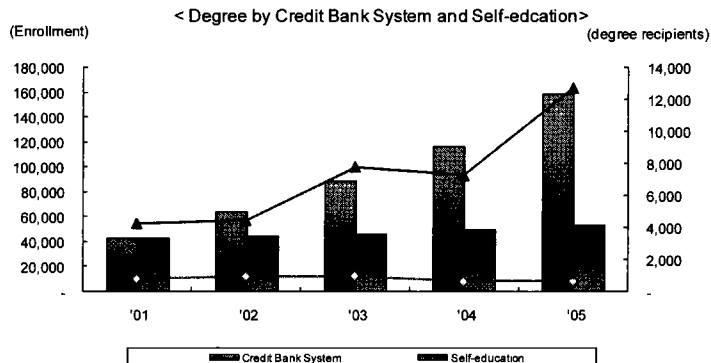
- Establish and promote 「Study Korea Project」 ('04.11), cooperating with universities, to attract 50,000 foreign students by 2010



### III-1. Data Based Education Planning and Management

#### 5. Opening the Era of Lifelong Learning for all Citizens

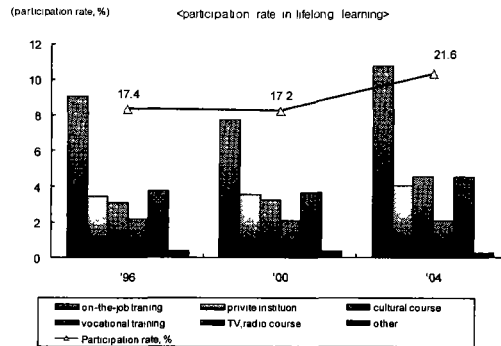
- Expanding opportunity of alternative higher education for adults by Credit Bank System, Bachelor's Degree Examination Program for the Self-educated, and Cyber University.



### III-1. Data Based Education Planning and Management

#### 6. The Participation Rate in Lifelong Learning

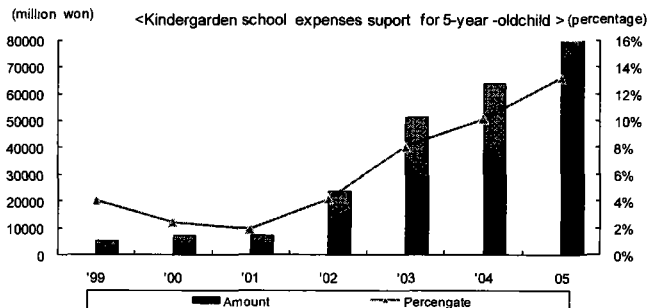
- Enhancing lifelong learning by promoting E-learning, Business Training, Lifelong Learning Festival with local residents, and Lifelong Learning City
- ※ Lifelong Learning City: 3('01) → 11('03) → 33('05) → 57('06) → 100 Local Bodies('08)



### III-1. Data Based Education Planning and Management

#### 7. Strengthening Educational Welfare Policy to Secure the Right to Education for the Underprivileged

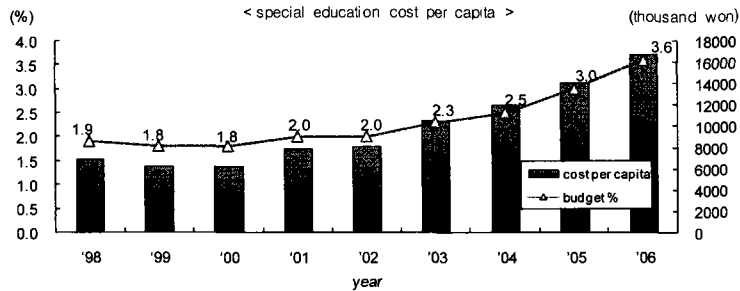
- Expanding aid for education fee of 5-year-olds of low income and providing aid graded education fee for 3 and 4-year-olds('04)
- ※ Supporting urban worker families of income of under 90% average(5-year-olds) and under 70%(3 and 4-year olds, '06)



### III-1. Data Based Education Planning and Management

#### 8. Special Education Cost per capita

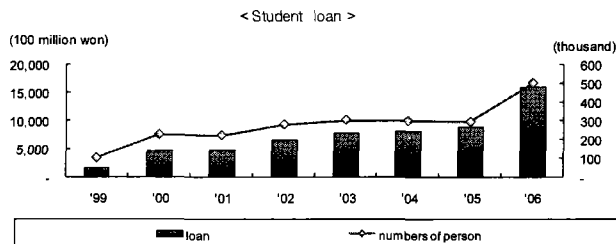
- Establish and promote 「Comprehensive Plan for Supporting the Disabled」 ('06.9.4)
- 「Comprehensive Plan for Special Education Development」 ('03 ~ '07)
- Supporting education fee for Infants with disabilities, expanding special education institutions, and establishing hospital school.



### III-1. Data Based Education Planning and Management

#### 9. The State of Student Loan

- Securing the opportunities of higher education for all who are able to education
- Starting student loan **guaranteed by government**(since fall semester of 2005) and introducing college labor scholarship system(2005)
- ※ The number of students taking student loan  
: 303,000, \74,7 billion('03) → 514,000, \1.6 trillion('06)
- ※ Recipients of college labor scholarship: 4,000, 8 billion('05) → 5,000, 10 billion('06)



### **III . Education Statistics and Education Planning**



#### **Data Based Education Planning and management**

1. Significant Improvement of Educational Condition
2. Generalization of Higher Education
3. The State of Industry-Academia Cooperation
4. The Number of Foreign Students
5. Opening the Era of Lifelong Learning for all Citizens
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8. Special Education Cost per capita
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#### **The Use of ICT in Education Planning**

eg. KEDI/CESI Homepage

eg. KEDI/CESI Homepage

## 5) National Report: Armenia

# NATIONAL REPORT ARMENIA

**Robert Stepanyan**

*Head of Development Program's Department,  
Ministry of Education and Science RA*

**Arshak Harutyunyan**

*Deputy Head of Department of International Cooperation and  
Diaspora,  
Ministry of Education and Science RA*

## GENERAL INFORMATION

➤ TERRITORY	29.8 THOUS. SQUARE KM
◆ POPULATION	3.3 MILLION
↘ REGION	EASTERN EUROPE AND CIS
• LOCATION	SOUTHERN CAUCASUS
➤ CAPITAL CITY	YEREVAN
◆ ADMINISTRATIVE DIVISIONS	10 REGIONS (Marzes)
↘ ETHNIC DIVISIONS	
↘	ARMENIANS 96%
↘	KURDS 1.8%
◆	RUSSIANS 1.2%
↘	OTHERS 1.0%
↘ LANGUAGES	ARMENIAN (OFFICIAL), RUSSIAN, ENGLISH

## THE STRUCTURE OF EDUCATION SYSTEM

- ◊ Preschool education
- ◊ General education
  - ✦ Primary school – 4 years
  - ✦ Middle school – 5 years
  - ✦ High school – 3 years
- ◊ Vocational education
- ◊ Higher education
  - ✦ Bachelor degree – 4 years
  - ✦ Master degree – 2 years
- ◊ Post-graduate education

## GENERAL EDUCATION

- |                         |          |
|-------------------------|----------|
| ◊ NUMBER OF SCHOOLS     | – 1332   |
| ◊ NUMBER OF STUDENTS    | – 477301 |
| ◊ NUMBER OF TEACHERS    | – 42669  |
| ◊ ENROLMENT RATIO       | – 92,7%  |
| ◊ STUDENT/TEACHER RATIO | – 11.2   |
| ◊ Av. CLASS SIZE        | – 22     |

## ISSUES AND CHALLENGES

- ❖ Discrepancy of the program to market economy and requirements of the democratic public,
- ❖ Education is more directed to granting of the academic knowledge, rather than development of skills,
- ❖ Limited use of modern methods of teaching and estimation including ICT,
- ❖ Unproductiveness of the system.

## REFORM GOALS

- ❖ Increase the quality of general education
- ❖ Ensure the compatibility of the Armenian education system to the current requirements of the society and economy and internationally accepted education standards
- ❖ Develop the Armenian education system towards the needs of “knowledge economy”.



## **ICT IN EDUCATION**

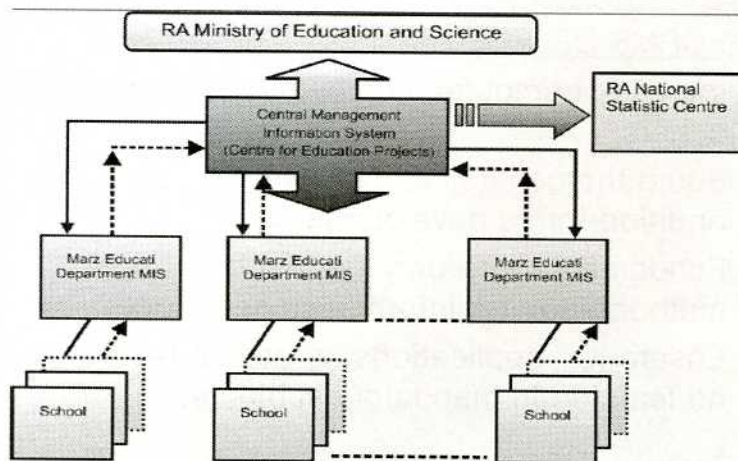
### **REFORMS OBJECTIVES**

- ❖ Increase computer literacy of learners and teachers
- ❖ Equip the general schools with ICT as a precondition for its development
- ❖ Fundamentally reform the teaching methodology for informatics at school
- ❖ Ensure ICT applications as part of teaching and learning in mandatory subjects.

## **EDUCATION MANAGEMENT INFORMATION SYSTEM (EMIS)**

- ❖ improve data collection, maintenance, analysis and dissemination
- ❖ make information available in all management levels
- ❖ reducing the collection of unnecessary data to minimum
- ❖ ensure information availability and transparency of education network data
- ❖ make decisions based on information and its analysis

## INFORMATION FLOW



## SCHOOL DATA QUESTIONNAIRE

- ❖ "Visit card"
- ❖ School administration
- ❖ School building and facilities
- ❖ School curriculum
- ❖ Teachers
- ❖ Non-teaching staff
- ❖ Students
- ❖ Library
- ❖ Funds received and spent

## 6) National Report: Georgia



საქართველოს  
განათლების  
და მეცნიერების  
საშინისტრო

# Educational Management Information System

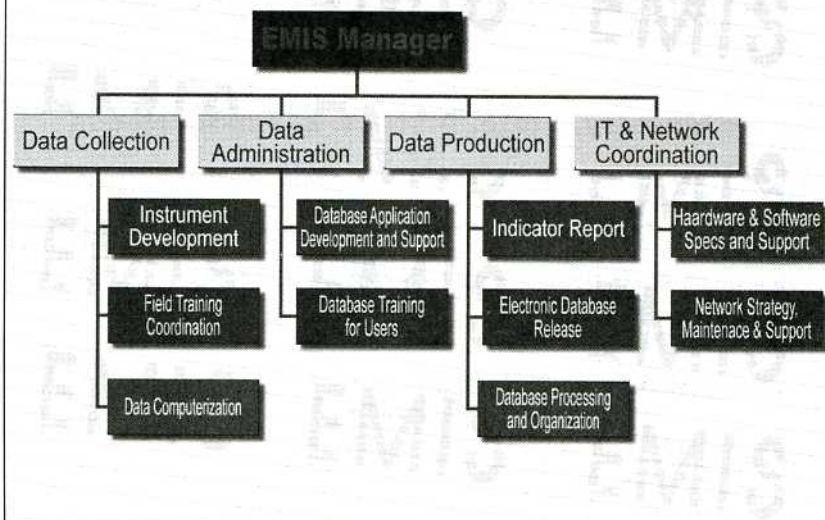
Otar Soselia

Head, EMIS, Ministry of Education and Science

Berika Shukakidze

Head, Analytical Dept., Ministry of Education and Science

## Organizational Structure of EMIS





საქართველოს  
განათლების  
და მეცნიერების  
საშინისბრო

## EMIS Challenges

- **Data Quality**
- **Information Content**
- **Timing**
- **Integration**
- **Administration**
- **Direction/Control**
- **Access**
- **Human Resources**
- **Physical Resources**
- **Technical Resources**
- **Staffing Skills**
- **Staffing Knowledge**
- **Staffing Attitudes**



საქართველოს  
განათლების  
და მეცნიერების  
საშინისბრო

## EMIS Design Goals

- **Serve Ministry, State, District, & School Needs**
- **Function as early learning & early warning system**
- **Focus on relevance and timeliness of information**
- **Build on existing strengths of Ministry**
- **Operate in an efficient manner**
- **Be adaptable and flexible**



საქართველოს  
განათლებისა  
და მეცნიერების  
სამინისტრო

## **EMIS Development Plan**

- Operation of EMIS is based on education resource centers (ERC), which are responsible for the collection verification of data and its provision to Ministry**
- Annual report of education system indicators and its posting on the website**



საქართველოს  
განათლებისა  
და მეცნიერების  
სამინისტრო

- Development of the data contents, structure and format, by improving the quality of its integration**
- Improvement of data reliability**
- Organizing trainings in resource centers**
- Shrinking the time frame for the distribution, collection and the analysis of data collection forms**
- Development of the website, expansion of the network connection and utilization of GIS**



საქართველოს  
განათლების  
და მეცნიერების  
სამინისტრო

### Nearest Future

- By the end of 2008 access to computers and the Internet in each school;
- By the end of 2008 to equip 80% of teachers with ICT Skills, to provide schools with technical support;
- By the end of 2008 to integrate ICT into curriculum;
- By the end of 2008 PC / student ratio 1/20;
- By the end of 2010 PC/ student ration 1/5;
- By the end of 2007 to introduce i-board to at least 5 schools.



საქართველოს  
განათლების  
და მეცნიერების  
სამინისტრო

### A Product of Mass Decentralization Process – Deer Leap Foundation (LEoPL)

- Least of products of Deer Leap Foundation:
  1. Annual national – wide competitions in webpage design;
  2. Annual national-wide competition in E – projects in Math, Science, Social Studies, Culture and Literature.



## Modernizing education system in Georgia: a human centered approach

2004–2006



### **General education**

#### **Goals**

- \*irrelevant design
- \*no shared goals

#### **Content & Methodology**

- teacher-centered, process-oriented
- curriculum addressing an 'average pupil'
- memorization and passive acceptance
- preparing solely for HE

#### **Resources**

- \*input oriented
- \*non-transparent
- \*school not repaired since built
- \*expenditure per capita in similar schools differed
- \*no teacher professional development

#### **Management**

- dual subordination
- authoritarian management
- non-inclusive environment, kept the parents & community away

*National assessment in literacy and math 2003: up to 40% below the low level*



Background: a legacy of decline

**Higher education**

*Institution & Management*

- ✱ corrupt entrance exams
- ✱ authoritarian management
- ✱ non-accountable
- ✱ gap between education and research
- ✱ no quality assurance mechanisms

*Content*

- ✱ predetermined, no choice
- ✱ obsolete methodology and curricula
- ✱ lecturer-centered approach
- ✱ non-responsive to demands of labor market
- ✱ non-comparable, non-compatible

*Financing*

- ✱ input oriented
- ✱ non-transparent

*Autonomy*

- ✱ centralized governance by the government

Those Georgian students admitted to European universities were taken back by 2 years???



Goals of the reform

**Knowledge-based economy**

**Competitiveness**

**Civic inclusion**

**Social inclusion**

Public expenditures on education:  
X 3 by 2010: 3% of GDP

Increase in quality of education

Compatibility with int'l system  
of education and R&D

Responsiveness to the labor market demands

Learning environment  
of modern standards

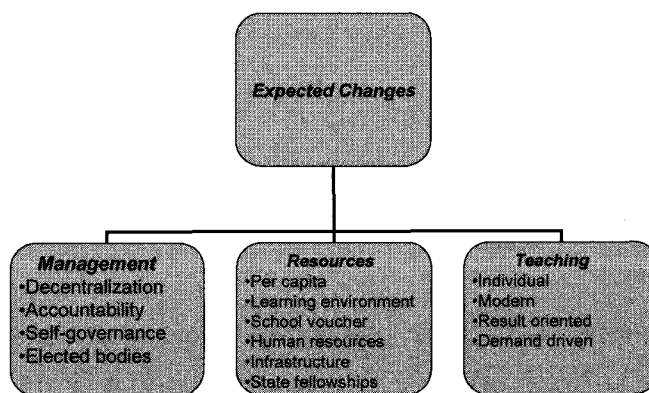
Better access to  
education

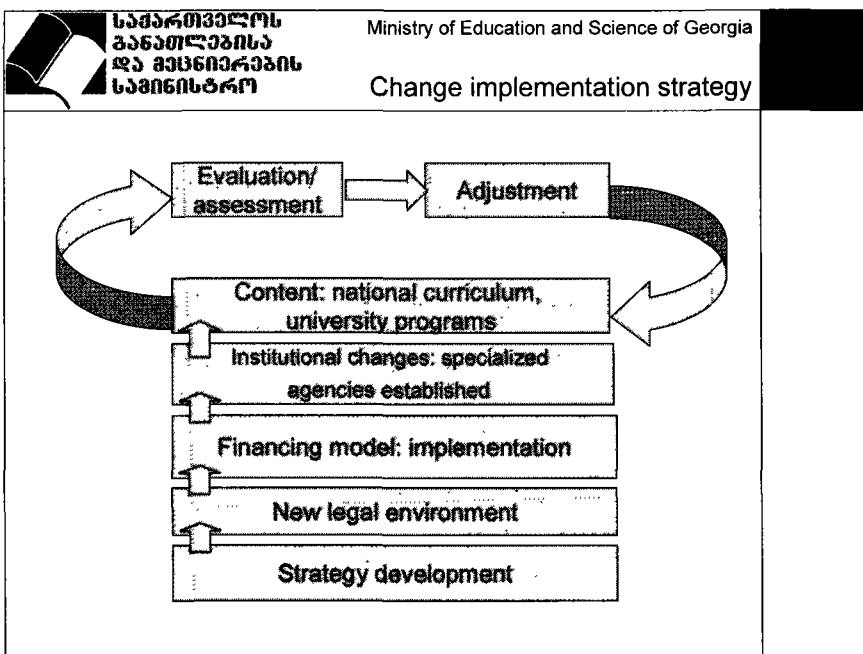
Favorable conditions  
for life-long learning






Reinventing the concept: a student  
Decentralization/liberalization  
Accountability  
Quality assurance: accreditation and standards  
Result oriented teaching and learning  
Skills for independent decision making  
Capacity building  
Freedom of choice  
Money follows student  
Public participation





	საქართველოს განათლების და მეცნიერების საშინისბრო	Ministry of Education and Science of Georgia  Implementation time frame
--	---	---

<h3>Higher Education 2004-2010</h3> <p>Legal framework – institutional changes - self-governance-curriculum – European Higher Education Area</p>
<h3>General Education 2004-2012</h3> <p>Legal framework-restructuring-self-governance-curriculum-teacher certification-infrastructure</p>



## Reform on the current stage

### Conceptual Changes

Conceptual framework developed  
National Curriculum – built around an individual → implementation in progress  
Teacher development concept: certification, incentives for growth  
VET Concept: new opportunities

### Legal changes:

Law on GE – School boards, freedom of choice  
Law on HE – Autonomy, Accountability, Financial Discipline  
Pending Draft Law – VET

### Institutional/Infrastructural Changes

NAEC (Examinations), TPDC (Teacher Professional Development), NCAC (Curriculum), NAC (Accreditation)  
HEI Accreditation – minimal standards of capacity  
School Rehabilitation Program: Better Learning Environment for 30% of Pupils  
School computerization: ratio 200/1 → 65/1  
Public expenditures: doubled since 2003  
New structures of governance – educational resource centers  
United Entrance Examinations 2005, 2006: “corruption eradicated”



## Contributing factors

- Political will: stability, coordinated interaction w/parliament
- Public expectations for changes
- Media campaign for changes
- WB financial aid and technical assistance
- Private business support: student loans, donations
- Lessons learned from other countries
- Foreign donors assistance: OSI, UNDP, USAID

## 7) National Report: Azerbaijan

# EDUCATION PLANNING AND MANAGEMENT THROUGH THE USE OF ICTs

Azad Akhundov,  
*Chief Executive, International Relations Department*

Vugar Abdulrahimov,  
*Leading Expert, Strategic Analysis,  
Planning and Personnel Management Department*

**Ministry of Education  
Baku, Azerbaijan, 2007**

## HISTORY OF EDUCATION

<b>Establishment of first schools in Azerbaijan</b>	<b>III century B.C.</b>
<b>Establishment of education system</b>	<b>VII-VIII centuries</b>
<b>Development of higher education in Azerbaijan</b>	<b>XI-XIV centuries</b>
<b>Education after the Independence period</b>	<b>since 1991</b>

## **CHALLENGES OF TRANSITION PERIOD**

**Change of ideology;**

**Reformation of the content of education in compliance with the national and universal values;**

**Development of new curricula, textbooks, learning materials, teaching guides and out-of-school reading materials;**

**Necessity to prepare new textbooks, training aids, learning and reading materials due to transition from Cyrillic to Latin script.**

## **STRUCTURE OF EDUCATION SYSTEM**

### ***PRE-SCHOOL EDUCATION***

<b>Day nursery houses</b>	<b>age 1 – 3</b>
<b>Kindergartens</b>	<b>age 3 – 6</b>
<b>Pre-school educational institutions</b>	<b>1761</b>
<i>Number of children</i>	<i>109.867</i>
<i>Number of teaching staff</i>	<i>14497</i>

### ***GENERAL SECONDARY EDUCATION***

<b>Primary education</b>	<b>I-IV grades, age 6 – 10</b>
<b>Basic education</b>	<b>V-IX grades, age 10 – 15</b>
<b>Secondary education</b>	<b>X-XI grades, age 15 – 17</b>

### **STRUCTURE OF EDUCATION SYSTEM**

<b>Secondary schools</b>	<b>4525</b>
<i>Number of students</i>	<i>1.531.226</i>
<i>Teaching staff</i>	<i>174.490</i>
<b>Lyceums and gymnasiums</b>	<b>53</b>
<i>Number of students</i>	<i>32.967</i>
<b>Number of private schools</b>	<b>13</b>
<i>Number of students</i>	<i>6047</i>

#### **THE MAJOR CHALLENGES IN GENERAL SECONDARY EDUCATION**

**Weak material, technical and instructional basis;  
Development of new curricula;  
An urgent need for construction of new school  
buildings and capital repair of existing schools.**

### **STRUCTURE OF EDUCATION SYSTEM**

#### ***VOCATIONAL EDUCATION***

**Duration of study in vocational  
schools 1 – 3 years  
(vocational schools, vocational  
lyceums)**

<i>Number of vocational schools</i>	<i>107</i>
<i>Number of vocational lyceums</i>	<i>46</i>
<i>Number of students</i>	<i>23.818</i>
<i>Teaching staff</i>	<i>6.760</i>

## **STRUCTURE OF EDUCATION SYSTEM**

### ***SECONDARY SPECIALIZED EDUCATION***

#### ***(TECHNICAL SCHOOLS, COLLEGES)***

#### **Secondary specialized education**

<b>institutions</b>	<b>56</b>
<b><i>Number of students</i></b>	<b>53.745</b>
<b><i>Teaching staff</i></b>	<b>6897</b>

#### **Private secondary specialized education**

<b>institutions</b>	<b>4</b>
<b><i>Number of students</i></b>	<b>3.127</b>

#### **Duration of study:**

<b>On completion of basic education</b>	<b>4 years</b>
<b>On completion of secondary education</b>	<b>3 years</b>

## **STRUCTURE OF EDUCATION SYSTEM**

### ***HIGHER EDUCATION***

**Bachelor programme** **4 years**

**Master's programme**  
**(institutes, universities, academies,**  
**conservatory)** **2 years**

**Post-diploma research for**  
**Doctoral degree** **3 years**

**In-service training** **6-9 months**

## **STRUCTURE OF EDUCATION SYSTEM**

### **HIGHER EDUCATION**

<b>Higher educational institutions</b>	<b>48</b>
<b>Public higher institutions</b>	<b>29</b>
<b>Specially assigned (special-purpose) (Police Academy, National Security Academy, etc) educational institutions</b>	<b>5</b>
<b>Private higher institutions</b>	<b>14</b>
<i>Number of students</i>	<i>130.000</i>
<i>Teaching staff</i>	<i>12000</i>

## **INTERNATIONAL RELATIONS**

**Educational relations**                      **above 30 countries**

**Cooperation with international  
organizations**

**Above 20**

**UNESCO**

**UNICEF**

**Council of Europe**

**European Union**

**Open Society Institute**

**Assistance Fund**

**United Nations**

**"German Academic**

**Exchange Service (DAAD)**

**TEMPUS**

**BRITISH COUNCIL**

**ACCELS**

**ISESCO**

**IREX**

**"Project Harmony"**

**Peace Corps**

**"World Learning"**

**Norwegian Refugee Council**

**International Medical Corps**

**Joint projects and programs**

**Above 70**



## **COOPERATION with UNESCO**

**Cooperation with UNESCO is implemented on some activities on the following directions:**

**Azerbaijan joined the UNESCO Paris Convention (1979) and Regional Convention on Recognition of Studies;**

**Cooperation within the framework of joint Programmes and Projects, including:**

***"Associative schools"* (18 schools are involved)**

***"Inclusive education"* (implemented in 2 kindergartens and 2 schools of Azerbaijan under the technical and financial assistance of UNESCO);**

***"Education for All"***

***"Improvement of technical vocational education"***

***"Establishment of UNESCO chairs at the institutions of higher education".***

## **EDUCATION REFORMS IN AZERBAIJAN**

**The Education Reform Project is implemented in the sphere of general secondary education in Azerbaijan on the basis of the World Bank Project and comprises three phases (1<sup>st</sup> Credit Agreement in 1999-2004).**

**The Program sets out the long-term education development concept and strategy, as well as phased reforms in the structure, management, content, material-technical base, economy and staff preparation**

<b>A Reform Project on the 2<sup>nd</sup> Credit Agreement</b>	<b>2003-2013</b>
<b>1<sup>st</sup> stage</b>	<b>2003-2007</b>
<b>2<sup>nd</sup> stage</b>	<b>2007-2010</b>
<b>3<sup>rd</sup> stage</b>	<b>2010-2013</b>

## **PRINCIPAL COMPONENTS**

***1<sup>st</sup> component:*** Quality of education and its compliance to real needs

**1<sup>st</sup> sub-component:** Curriculum reform

**2<sup>nd</sup> sub-component:** Teacher training

**3<sup>rd</sup> sub-komponent:** Textbooks and Reading Materials

***2<sup>nd</sup> component:*** Efficiency and Finance Reforms

**1<sup>st</sup> sub-component:** Financing and Budgeting Reforms

**2<sup>nd</sup> sub-component:** Rationalization and School Improvement

***3<sup>rd</sup> component:*** School Grant Program

***4<sup>th</sup> component:*** Management, Planning and Monitoring Capacity

**1<sup>st</sup> sub-component:** Establishment of a new System of Student  
Assessment

**2<sup>nd</sup> sub-component:** Education Management Information  
Systems

**3<sup>rd</sup> sub-component:** Management and Planning Capacity

***5<sup>th</sup> component:*** Project Coordination and Monitoring

**THE USE OF INFORMATION COMMUNICATI  
ON TECHNOLOGIES IN EDUCATION PLANNING  
AND MANAGEMENT.**

**EDUCATION MANAGEMENT INFORMATION  
SYSTEM IN AZERBAIJAN**

#### **THE USE OF INFORMATION COMMUNICATION TECHNOLOGIES IN EDUCATION SYSTEM**

**The “Program on providing general education schools with information communication technologies (2005-2007)” was approved by the Decree of the President of Azerbaijan Republic in August 21, 2004.**

**In 2005-2006 1.104 schools were provided with ICT and other equipment, while 437 schools received notebooks and projectors.**

**4000 teachers attended ICT in-service trainings.**

**Electronic study materials and visual aids have been developed and distributed to schools for use in the process of teaching Azerbaijani history, biology, chemistry and physics.**

#### **THE USE OF INFORMATION COMMUNICATION TECHNOLOGIES IN EDUCATION SYSTEM**

**During the last year of implementation (2007) of the Program it is planned to provide 2.144 schools with ICT and other equipment, as well as train up to 10.000 teachers.**

**At the same time a new program for provision of the entire education system with ICT is under preparation (2008-2012).**

## **KEY CHALLENGES OF ICT APPLICATION**

**Schools don't effectively use the provided ICT equipment ;**

**Some schools don't have computer literacy and subject teachers who have attended certain trainings and still lack necessary skills in ICT application;**

**The methodological resources are not sufficient;**

**School managers cannot effectively apply ICT in the process of teaching and management.**

## **OBJECTIVES OF ICT APPLICATION**

**Expansion of the possibilities for using ICT in the process of school management;**

**Organization of regular professional development courses on ICT for management staff, managers of educational institutions and subject teachers;**

**Integration of a course on ICT into the content of in-service training;**

**Broadcasting by mass media of scientific and popular programs and special rubrics on the use of ICT in educational process;**

**Development of new standards on information and communication technologies;**

## **OBJECTIVES OF ICT APPLICATION**

**Development of requirements for knowledge of information communication technologies considered obligatory for teachers and students and mechanism of their monitoring;**

**Development of textbooks, instructional materials, and methodological guides on the use of information and communication technologies in education;**

**Development, assessment, dissemination, and elaboration of application mechanism of new generation of electronic textbooks.**

## **THE USE OF ICT IN EDUCATION PLANNING AND MANAGEMENT**

**The Ministry of Education in Azerbaijan considers planning, in particular strategic planning process as a tool for provision and strengthening of co-ordination, decentralization, monitoring and accountability, as well as development its capacity in these areas.**

**Planning is a process that requires the implementation of the events and activities which takes the future development into account.**

**The purpose of planning of technology application is to increase students' and teachers' performance.**

**ICT is used as the learning object in education system and as a tool in teaching process, in education management and planning and in applied educational researches.**

**THE SPECIFIC OBJECTIVES OF EDUCATION  
MANAGEMENT INFORMATION SYSTEM SUBC  
OMPONENT**

**To define and provide appropriate personnel and other resources for EMIS team;**

**To define the policy of planning and EMIS activities;**

**To draw up the Master Plan of EMIS;**

**To prepare the system of collecting data on School Mapping for the subsystem of EMIS, to test and change the same subsystem; to run the system for School Mapping in order to collect data;**

**To prepare and implement the training plan for EMIS's team;**

**To prepare and implement a plan for an efficient use of computers in Regional Education Departments;**

**To define a reliable system program for EMIS.**

**THE MAIN OBJECTIVES OF EDUCATION MANAGEMENT  
INFORMATION SYSTEMS (EMIS) DEPARTMENT IN THE M  
INISTRY OF EDUCATION**

**Working out and realization of the Programs on the application of ICT in education;**

**Providing pedagogical and methodological assistance to all educational institutions in implementation of the state policy related to TIMS and School Mapping;**

**Participation in the implementation of an extensive training program for EMIS, School Mapping and ICT;**

**An active participation in the establishment of the scientific-technical basis for the solution of the organizational problems of distant education;**

**Solving the problems faced during the process of setting up electronic archive and electronic library;**

**Providing all educational institutions that are subordinated to the Ministry of Education with information systems;**

**THE MAIN OBJECTIVES OF EDUCATION MANAGEMENT  
INFORMATION SYSTEMS (EMIS) DEPARTMENT IN THE M  
INISTRY OF EDUCATION**

**Preparation of the state standards of information  
communication technologies in all spheres of  
education and ensuring its application;**

**Working out main directions of informatisation  
of education and suggestions on the mechanism of  
their implementation;**

**The use and development of new information  
technologies at all levels of education;**

**Ensuring information security in global  
information-education environment;**

**THE PROCESS OF EDUCATION MANAGEMENT  
INFORMATION SYSTEM**

**All data are collected and recorded both in electronic  
and paper formats.**

**So the data are sent by means of computers from the  
Regional Education Department of 3 pilot regions  
(Ali-Bayramly, Ujar and Ismayilly) that were defined  
by mutual consent of the Ministry of Education and  
appropriate ministries, but in other regions  
preliminary defined questionnaires are completed and  
sent to the Ministry of Education.**

**The data are stored in the database of EMIS  
department.**

## 8) National Report: Mongolia



# **National report on use of ICT in education planning and management**

Presenter: Selenge Gantumur  
/Mongolian National Commission for UNESCO/

## **Structure of the Education System in Mongolia**

### **Formal**

- Pre-school
- General education
- TVE and college
- High education

### **Non formal**



## The use of ICT in education sector

- Universities since 1982
- Secondary schools since 1988

## Legislative documents

- In January 2000, Parliament adopted “NATIONAL VISION FOR ICT DEVELOPMENT OF MONGOLIA UP TO 2010 (VISION 2010)” as an official national developmental concept for next 10 years.
- In June 2001, “ICT VISION 2010 IN EDUCATION SECTOR OF MONGOLIA” was adopted by the Minister of Ministry of Education Culture and Science (MoECS)
- In August 2006, Mongolian Government adopted EDUCATION MASTER PLAN to develop education of Mongolia for 2006-2015
- In 2005, The Government approved an “E-MONGOLIA NATIONAL PROGRAM”

## **“National Vision for ICT development of Mongolia up to 2010”**

- Create structure to provide education on ICT for all citizens ;
- Set up knowledge and education based high tech centers in Ulaanbaatar and in the centers of the socioeconomic development regions;
- Create a set of opportunities to access ICT at mobile sights running sustainable common services, libraries, rural schools ;
- Create info structure for education:
- Resolve in detail human resource development issue of the national info structure (user, trainer, specialist):
- Introduce electronic version of library system such as ordering, searching and others;
- Develop lifelong learning through open and distance learning;
- Introduce electronic services such as leisure and entertainment (virtual libraries, museums, etc.,)

## **“ICT vision 2010 in education sector of Mongolia”**

- Training
- Hardware
- Teaching staff
- Information ware

## **The Master plan to develop education of Mongolia (2006-2015)**

- Organize training for teachers on ICT-based training
- Development of manuals, guidelines and textbooks
- Utilize educational TV and expand the application of internet and new ICT in school level
- Establish centers to provide ICT training and consulting services

## **E-Mongolia National Program**

- Achievement of an average international ICT literacy level by 2012 (80% of all capable people)
- 70% of soums (smallest administrative unit), 100 % of province centers and cities will attend the distance learning system by 2012
- Creation of the model e-school (50 % of schools will have e-school capability by 2012)

### Current situation /achievement/

- The development of content on CDs, web site and other training applications
- There are 4776 computers available in 524 secondary schools, or nine computers per school in average (MoECS, 2004)
- The Informatics subject is being taught to from 8th to 11th grade students in accordance with the curriculum.
- In education and science technology sectors, 16 universities are connected to the Internet network "Erdemnet"
- 102 general education schools connected to e-mailing system
- Teleconferencing room was facilitated at the MoECS

### Current situation /weakness/

- Lack of the professionally trained staff
- Electricity problem at soums (smallest administrative unit)
- Can not use e-mailing system regularly
- High need on development of manuals, textbooks and handbooks

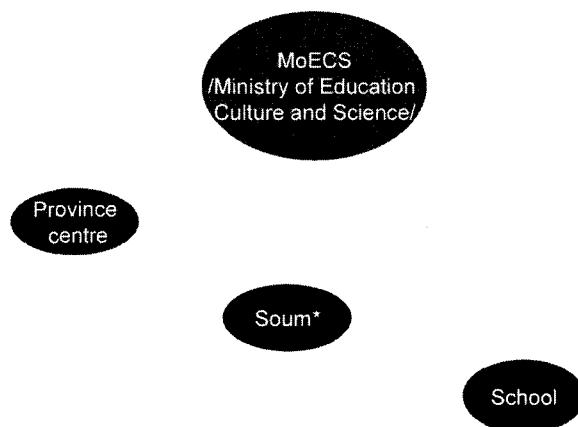
## Essential to be focused on in utilization of the ICT in training

- To start reflection work of the ICT utilization in the all stage school curriculums
- To learn the best practices of utilization of the digital divide in education
- To make basic study on how the ICT is introduced in the education sector
- To renew and develop the books, manuals, and e-devices
- To develop new curriculum for the training of teachers in the new technological facilities and new trend
- To make changes in the thought of school managers and teachers on traditional teaching
- To develop methodology which identifies what duty imposes the utilization of the ICT in the training to teachers, trainees and even to the technology, what shall be changed and how to affect them.

## The use of ICT in education planning and management

- Create inter-sector database and integrated network on early childhood services
- Establish the education information and management system and database
- Establish a national system of monitoring and evaluation for non-formal education
- Connect all educational institutions, schools and kindergartens to internet
- Complex schools and schools in regional centers will be connected to national distance education network, and supply necessary equipment
- Establish centers to provide ICT training and consulting service
- Optimize assortment of documentation of school's administration and training departments, and introduce new software and technologies

## EMIS in Mongolia



THANK YOU

Mongolian National Commission for UNESCO

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# ICT in Education in Uzbekistan

UNESCO-KEDI STUDY TOUR  
10–13 July, 2007  
Seoul, Korea

## Background information

### **The Republic of Uzbekistan:**

- ☐ **Area – 447 thousand sq. km;**
- ☐ **Population – 27 million people;**
- ☐ **Children under 16 years – 48% of the population;**
- ☐ **Youth under 25 – 60% of the population;**

## Education in Uzbekistan

- The Constitution of Uzbekistan guarantees free, equal and obligatory access to primary and secondary education;
- The Public Education of Uzbekistan has almost a universal enrolment rate up to the secondary school level.
- Adult literacy rate–99%
- Share of the adult population with specialized secondary, vocational or higher education exceeds 75%.

## Legal framework

- Constitution of the Republic of Uzbekistan;
- The Law of the Republic of Uzbekistan “On education” –1997;
- The National Programme on Personnel Training–1997.
- National state program for the development of school education for 2004–2009



## Formal education system

- **Pre-primary:**
- **Basic**—4 years at primary level and 5 years at middle level
- **Specialized secondary** (3 years for both general and vocational/specialized)
- **Higher education** is imparted in universities and various types of institutes (BA and Master).

## Structure of education system administration

- Cabinet of Ministers (Social complex)
- Ministry of Public Education (MPE)
- Ministry of Higher and Secondary Specialized Education (MHSSE)
- Center for Secondary Specialized and Vocational Education (under MHSSE)

## Main priorities for basic education

- Strengthening and development of material–technical basis of schools;
- Provision of schools with modern learning and laboratory equipment, computers and ICT, textbooks and instruction materials;
- Improving learning standards and syllabi;
- Provision of general secondary schools with good quality teaching staff;
- Developing sports and improving sports facilities in general secondary schools.

## ICTs in education

Indicators	Number		
	May 2003	July 2004	January 2006
Number of students at secondary schools per 1 computer*	477 (107.6)	434 (98.8)	324,4 (90.2)
Number of students at secondary schools per 1 computer classroom	4766	4344	3394,5
Number of secondary schools per 1 computer classroom	7.7	6.8	5.6
Number of computers in secondary schools connected by LAN	22191	23928	32744
Share of secondary schools with Internet access (%)	1.2	1.5	1.7

## ICTs in education

Indicators	May, 2003	July, 2004	Oct., 2005	Jan., 2006
Share of academic institutions having websites (%)	0.75	1.03	1.41	1.41
Share of disciplines taught with use of ICT among total number of disciplines (%)	-	13	14.4	14.4
Share of teachers - users of distance education (%)	-	0.7	0.9	0.9
Share of academic institutions using computer testing	-	25.2	28.5	28.5

### National Strategy of the ICT Introduction into General Educational Process

- The main objective of the strategy is to determine of the strategic directions for the effective and sustainable development of ICT and its integration into general education.

## **National Strategy of the ICT Introduction into General Educational Process**

- The main goals are:
- – to provide the conformity of this strategy to the national priorities in the informatization field;
- – to work out effective approaches on the ICT introduction into schools;
- – to ensure the correspondence of the informatization processes to the educational aims and tasks;
- – to build capacities of teachers and other school personnel on the use of ICTs in education process;

## **National Strategy of the ICT Introduction into General Educational Process**

### ■ **First stage (2006–2010)**

The main goals and tasks of the first stage:

- – to improve the quality of the learning process on priority subjects like mathematics, natural and social sciences, languages;
- – create necessary infrastructure and favorable conditions for using ICT in educational process by ensuring a sustainable financing for it.

## **National Strategy of the ICT Introduction into General Educational Process**

### **■ Second stage (2010–2015)**

The main goals and tasks of the first stage:

- – to improve the quality and results of the learning process by the means of ICT using;
- – to fully integrate ICTs into the education process in general education.

## **EMIS in Uzbekistan**

- Joint project between Ministry of Public Education, UNICEF and UNESCO;
- UNESCO project supported by the Korean Funds-in-Trust;
- ADB loan.

## EMIS in Uzbekistan

Department of the MPE involved in data collection and analysis:

Department of Monitoring: collects data on all aspects of education including infrastructure, pupil and personnel data for the primary purpose of monitoring learning achievement;

The personnel department collects information on MPE administrative staff and school level staff;

The other departments (monitoring, accounting and administration) collect information on areas of specific interest such as asset, financial, and textbook information.

## EMIS in Uzbekistan: major issues

Duplication of data collection efforts resulting in waste of resources and confusion as to which data is accurate.

- An apparent culture of information hoarding leading to agencies and government departments to report difficulties in obtaining education data.

- No overall strategy of EMIS development is evident. There is no vision of EMIS development at the regional and district level other than to use the SMIS at the school level to obtain data.

Information is gathered extensively but not extensively utilised particularly for policy development and high level planning.

## ICTs in education: lessons learned

- 1. Need to evaluate the ICT readiness of policy makers, education planners and managers, teacher educators and teachers, identify the educational needs for using ICT in Uzbekistan.
- 2. Need to harness the potential of rapidly developing ICT for education will be an urgent challenge for policy makers.
- 3. It is necessary to use overarching strategies to leverage local and school-based potentials.
- 4. Need to develop ICT standards for teachers and for students, which is one of the most important components in national ICT-in-education policy and also an overarching guidance for follow-up activities, including ICT curriculum development, ICT teacher education, and practices of ICT in the teaching and learning process.

## ICTs in education: lessons learned

- 5. There is a need to organize an ICT-in-education Manager Forum which shall focus on building leadership and management of education managers (EMIS/SMIS may be the focus).
- 6. Encourage and empower schools and teachers in minority areas to use Free and Open Source Software (FOSS) to design and deliver local-language-based teaching and learning materials. Wiki is recommended to be introduced to local teachers, cooperation in local content development should be facilitated.
- 7. There is a need to prioritize the goal of using ICT to support local-language content design and ensure girls' participation in ICT using.

## Areas for technical assistance

### **1. Improvement of the use of ICTs as a tool for a better education sector planning, management and monitoring of education systems;**

The main focus here should be concentrated on the further refining of EMIS tools and training of education system staff in more effective data collection, analyses and use for policy formulation, planning and management.

## Areas for technical assistance

### **2. Effective use of ICTs as a tool for the delivery of educational content and services;**

Assistance required in national capacity development in the use of ICTs as an efficient and effective tool for the delivery of educational services in Uzbekistan. Support needed for developing feasible and sustainable programmes and mechanisms for improving teaching and learning processes by means of ICT, as well as for designing appropriate educational contents and software tools for its delivery to different users of the national education systems.



## 10) National Report: Kenya



### MINISTRY OF EDUCATION

## **KENYA NATIONAL REPORT**

### **ROK-FIT STUDY VISIT PROGRAMME,**

### **10-13<sup>TH</sup> JUNE 2007**

**Charles Obiero**

*Senior Economist/Statistician, EMIS IP Team Leader  
Ministry of Education, Republic of Kenya*

**Barnabas Sang**

*Head ICT, Ministry of Education, Republic of Kenya*

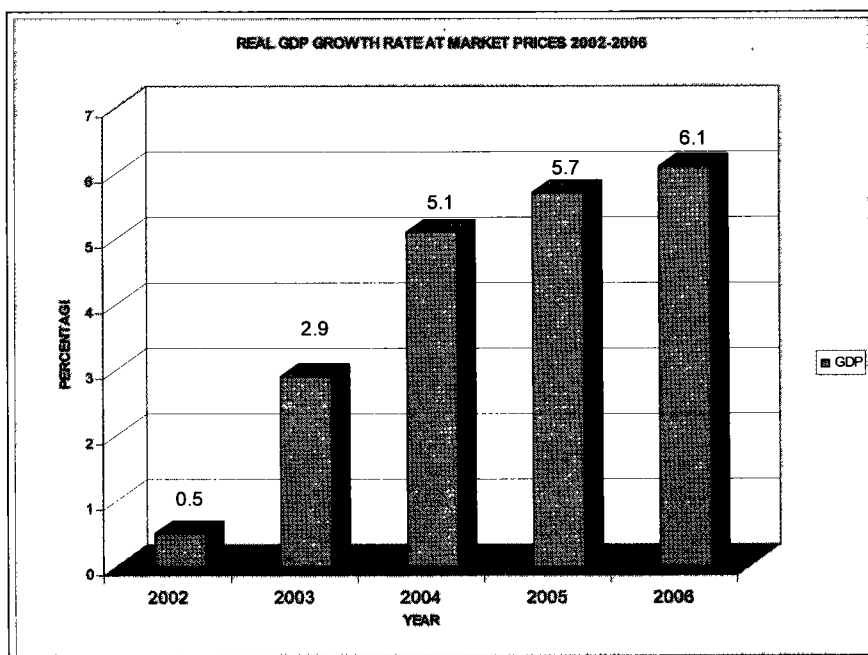
**Eva Ntalami**

*Research Assisant, Education Unit, UNESCO Nairobi Office*

22nd June 2007

## Introduction

- The Kenyan population is estimated to be about 35 million persons.
- The national absolute poverty declined from 52.3 percent in 1997 to 45.9 percent in 2006.
- In terms of administrative units there are 8 provinces and 108 districts.
- Current the GDP growth rate is 6.1%.
- Figure below shows the GDP growth in the last five years



### **Context of the Education System**

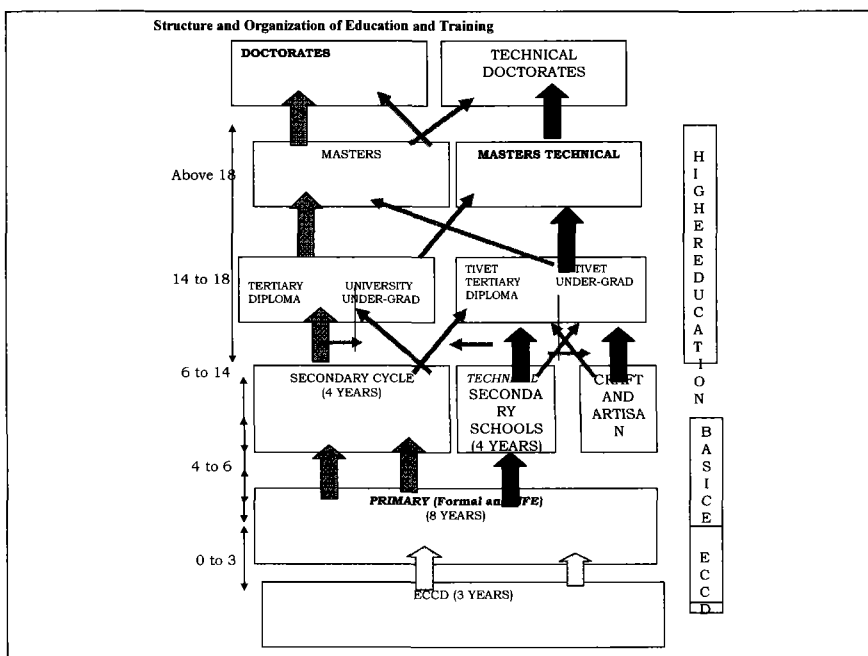
- Since independence, development of the education sector has been the Government's priority.
- Several education reforms initiatives have been held.
- In one of the reforms a major change was in the structure of the education system from 7:4:2:3 to 8:4:4
- Since 1990, the education sector had Low enrolment due to high cost of education and high poverty levels

### **Context of the Education System....cont**

- Free Primary Education was introduced in 2003.
- Immediately, over 1 million children were enrolled.
- With a Net Enrolment Rate (NER) of 86.5 percent, implies that there are still children not accessing.
- In 2005, the Ministry adopted a sector wide approach (SWAP) in planning for resource mobilizations.
- The Kenya Education Sector Support programme (KESSP) has 23 investment programmes.
- The goal of KESSP is to achieve Education For All (EFA) target by 2015.

### **Structure of Education**

- The current structure of education and training in Kenya comprises of the following:
  - Early childhood care (ECDE): 3 years for 3–5 year olds
  - Primary education: 8 years ,for 6–13 year–old children,
  - Secondary education: 4 years and caters for 14–17 year–olds
  - TIVET: 6 months to 3 years
  - University education: Minimum of 4 years.

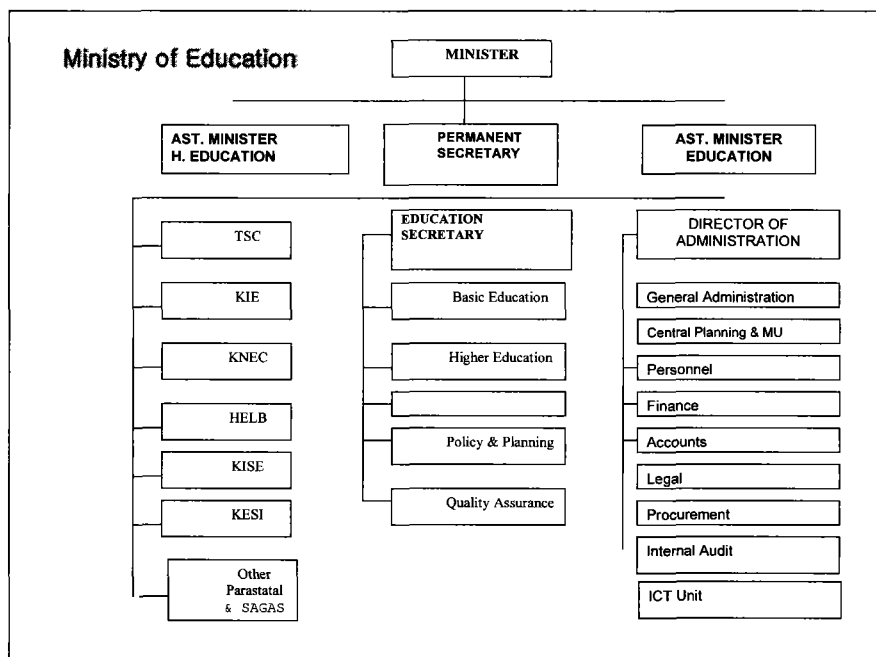


## Institutional Organization

- The Ministry of Education is responsible for the provision of education, training, research, policy planning and implementation.
- Administratively: Minister, Assistant Ministers, Permanent Secretary, Education Secretary and Head of Directorates, support departments and parastatals.
- The education directorates are: Directorate of Policy and Planning, Directorate of Higher Education, Directorate of Basic Education and Directorate of Quality Assurance and Standards.

## Institutional Organization (cont)

- The parastatals include:
  - ❑ Teachers Service Commission (TSC);
  - ❑ Kenya Institute of Education (KIE),
  - ❑ Kenya National Examinations Council (KNEC);
  - ❑ Science Equipment Production Unit (SEPU),
  - ❑ Commission for Higher Education (CHE);
  - ❑ Higher Education Loans Board (HELB);
  - ❑ Kenya Education Staff Institute (KESI);
  - ❑ United Nations Educational, Scientific and Cultural Organizations (UNESCO),
  - ❑ Jomo Kenya Foundation (JKF);
  - ❑ Kenya Literature Bureau (KLB); and
  - ❑ Centre for Mathematics, Science and Technology



## Situation Analysis

- The number of students enrolled has substantially increased.
- Enrolment in ECDE increased from 483,148 children in 1982 to 1.6 million children in 2006.
- Primary level enrolment increased from 891,533 pupils in 1963 to 7.6 million pupils in 2006.
- Secondary level enrolment increased from 30,000 students in 1963 to 1,030,000 students in 2006

**Number of Education Institutions, 2001–2006**

Level	2001	2002	2003	2004	2005	2006*
ECD	27,573	28,279	29,455	31,879	32,043	33,121
Primary	18,901	19,030	19,554	19,713	19,849	20,229
Secondary	3,657	3,684	4,071	4,111	4,197	4,215
University	17	19	23	24	24	24
Teacher Training	32	32	32	33	33	33

### Enrolment in Education Institutions

Level of Education	2001	2002	2003	2004	2005	2006
ECD	1,323,454	1,455,627	1,602,232	1,627,721	1,643,175	1,672,336
Primary	5,941,610	6,062,742	7,159,523	7,394,763	7,597,286	7,632,113
Non Formal Education			83,283	112,716	169,073	171,890
Secondary	763,245	778,601	882,390	923,134	934,608	1,038,080
University	71,349	80,961	82,090	91,541	92,316	112,229
Teacher Training Institutions	20,349	20,177	21,136	21,839	22,280	29,212

### Issues and Challenges in Educational Sector Reform

- The current challenges of the 8-4-4 education system are as follows:
  - Low enrolment of TIVET institutions due to its non responsive curriculum to labour market, lack and dilapidated equipment, inappropriate technological and unskilled staff among others.
  - System does not cater for the disadvantaged, those with special needs and those outside the formal education system.
  - The formal schools have no facilities to address the needs of the physically challenged children.

### **Issues and Challenges in Educational Sector Reform.....cont**

- ❑ Overloaded curriculum
- ❑ High cost of education to parents
- ❑ Limited provision of learning and teaching materials– costs are high and hence schools or parents cannot afforded, and
- ❑ Limited resources to cater for operational and maintenance costs–depreciation of equipment is not catered or inadequate.

### **USE OF ICT IN EDUCATION SECTOR**

- **National Initiatives:**
- ICT is key to the development of the nation.
- Zero rating of duty on Computers and accessories to make them affordable
- Training opportunities in ICT and technological innovations in software development and assembly hardware in the country.
- e-learning conference to tap on technological advances



#### **USE OF ICT IN EDUCATION SECTOR**

##### **Equipping schools with ICT Laboratories:**

- NEPAD initiative in Kenya established 7 model schools with e-learning laboratory as a starting point for the country in ICT in schools development.
- Two secondary schools in each district with well equipped computer labs
- Support from Korea's Gangwon-Do Province Education Office – 300 PCs Annually
- The target is improve average access from the current one computer for 150 students to one computer for at least 50 students in secondary schools .
- Private sector support in equipping schools with computers encouraged.

## **Challenges in ICT**

### **ICT Connectivity and Network Infrastructure development:**

- The Universities under the KENET initiative have come together to build the ICT infrastructure that promotes Wider Area Networking of the institutions and selected National polytechnics for information sharing.

## **Challenges in ICT...Cont**

- High levels of poverty that hinder access to ICT facilities
- Limited rural electrification and frequent power disruptions.
- Limited access to dedicated phone lines and high-speed systems or connectivity to access e-mail and Internet resources.
- Alternative and appropriate technologies for access to Internet resources, including wireless systems remain quite expensive

## **Challenges in ICT...Cont**

- Lack of appropriate local digital content has been cited as a major hindrance for recognizing the appropriateness of ICT investments in education institutions.
- Teacher capacity building and retention after training still major constraint in ICT. Teacher's once trained, they move to private sector and industry (training officers)

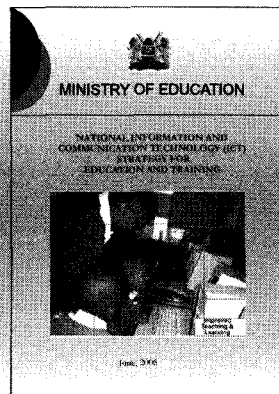
## Policy Response

- The Government formulated a National Information and Communication Technology Policy that provides the framework for all the actors in ICT implementation.
- The Government strategic plan for ICT (e-government) lays emphasis on ICT interlink between the Ministries with a planned rollout countrywide physical local area network

## Policy Response...Cont

### Development of a National ICT Education Policy and Strategy

- Developed and launched in August 2006



## Policy Response...Cont

- ii) Adoption of NEPAD
- ii) Implement  
NEPAD E-Schools  
Initiative

And various  
interventions for  
scaling up ICT  
access in the  
sector



## Use of ICT in Education Planning and Management

- The Ministry sees it as a necessity to have an established high quality, robust, sustainable, secure, easily supportable and flexible ICT infrastructure.
- The establishment of Wide and Local Area Networks in the Ministry Headquarters and other agencies for enhance collaboration.
- The continuous training of staff on ICT skills.

## **EMIS Components**

- Review and harmonization of instruments and data collection
- Data processing and management
- EMIS development and infrastructure support
- Analysis and dissemination
- EMIS human resource and capacity building

## **Centralized vs Decentralized**

- Verification of processed data (Accuracy)
- Use of information generated in decision-making at source: school-level and districts (participatory decision-making)
- Time and resource savings
- Institutional capacity building

## **Key Issues and Obstacles in use of ICT**

- **Staff Skill limitation:** Lack of ICT skills in majority of the staff is a hindrance to their ability to use ICT in education planning and management.
- **Inadequate ICT hardware:** Only a few MoE staff especially those on management levels have access to computers. The situation is critical especially at the province and district levels.

## **Key Issues and Obstacles in use of ICT...Cont**

- **Limited computerized data processing:** Data use among the staff is a daily function but most of it is manual. This hinders efficient delivery of education services.
- **Non user friendly database system:** The ministry has limited processing of information but is not easily accessible for use in education planning and management.

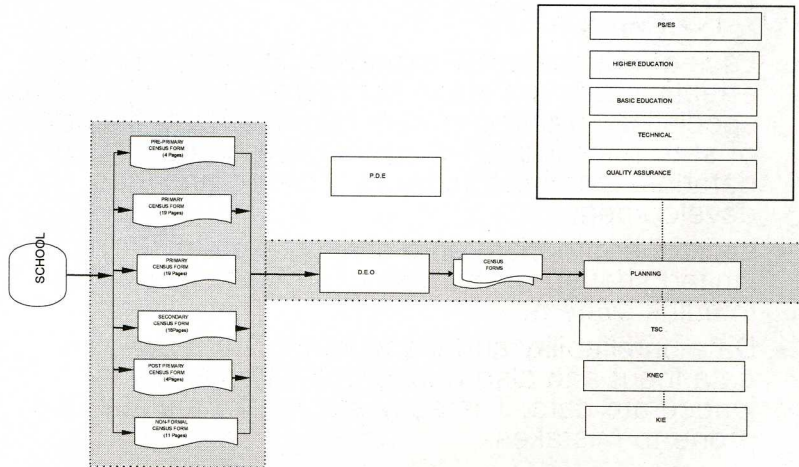
## Key Issues and Obstacles in use of ICT...Cont

- **Lack of adequate ICT expertise:** In order to have effective data management there is no for specialized training in data management. Majority of staff handling ICT support have no training in database administration, networking and web development.
- **Lack of appropriate data sharing system:** There is limited sharing of the datasets due to lack of an interlink system.
- **Data unreliability and inaccuracy:** The process of data input and also during collection leads to inaccurate data. The early stages are manual and prone to mistakes.

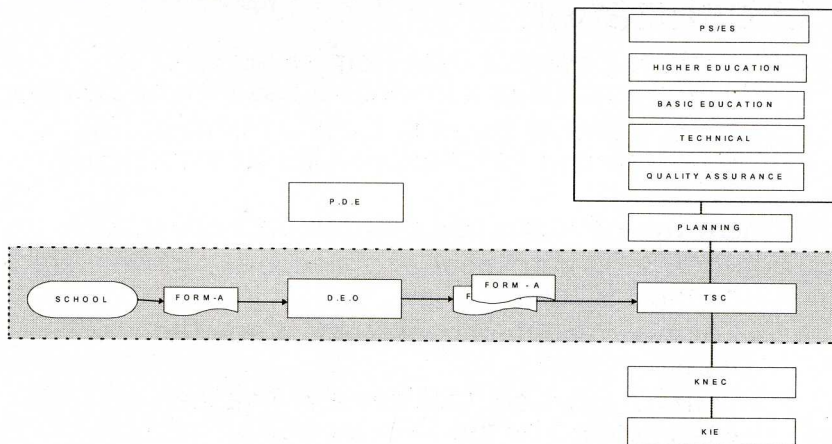
## EMIS – Structure and Institutional Organization

- The Ministry collects data from all levels of education institutions on annual basis in the country.
- In 1998, mandate given to Central Planning Unit (CPU), MoE and Teachers Service Commission (TSC)
- There were 4 forms used for the data collection:
  - Form A on enrolment and teachers– administered by the TSC and
  - Form B–school management, drop outs, repetition and
  - Form C\_ physical facilities and finance– administered by the CPU as well as data on tertiary institutions.
  - ECD survey form

## Data flow & constraints (Annual School Census)

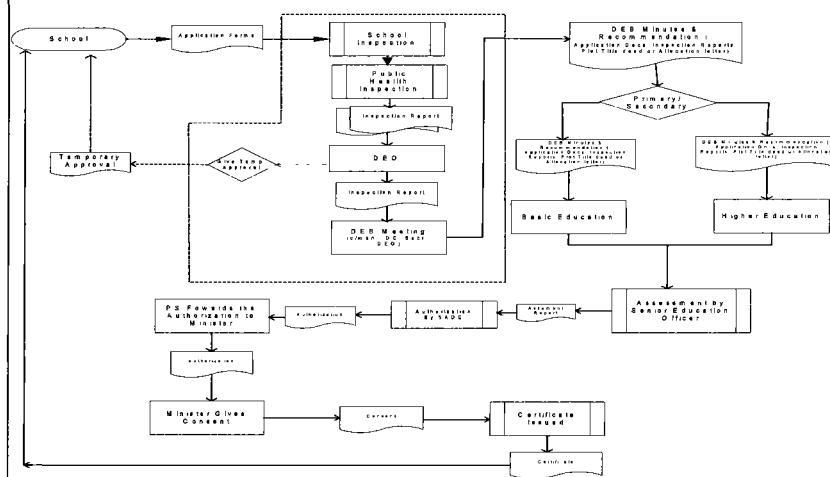


## Data flow & constraints (TSC Form A)



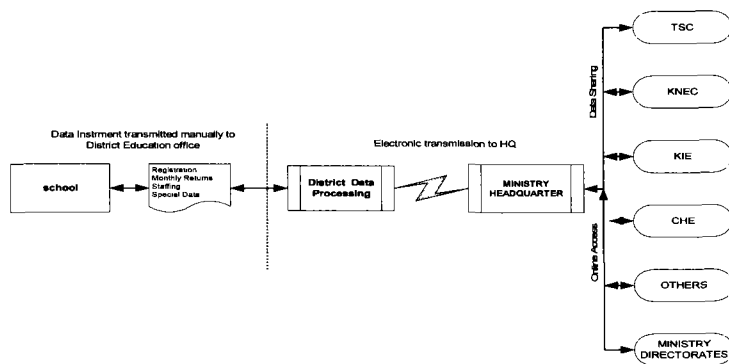


### 1. School Registration Forms and Procedure

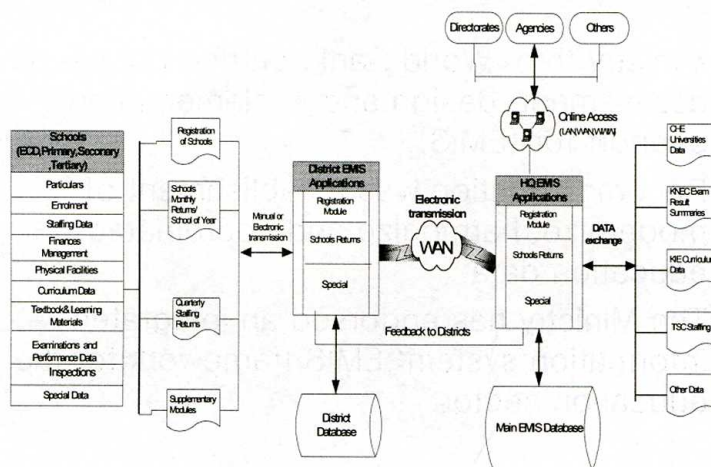


- Ministry thro, World Bank, carried out needs assessment, design and implementation support for (EMIS).
- Recommendation was establishment of modernize, harmonize and coordinated education data.
- The Ministry has endorsed an integrated information system: EMIS framework for the education sector.

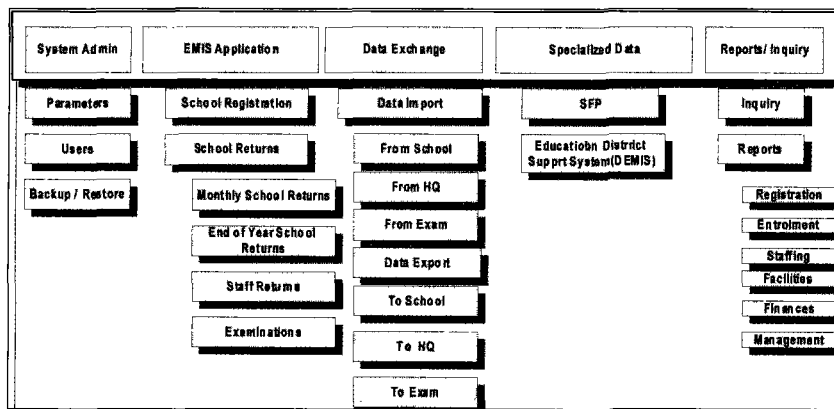
## Revised Data flow



## Design Framework



## EMIS Application Design



## Data Collection Instruments

The key data sets collected are as follows:

- Enrolment profile: Number of students, age,
- Teacher profile: Number, qualification, subjects, workload
- School characteristics: public/private, mixed/boys/girls, day/boarding
- Physical facilities: Buildings and equipment
- Finance: Income, Grants, expenditure
- School management:
- Quality assurance
- Performance

## **Improving Education Planning and Management**

- Need for reduction of data processing period from over 1 year to 3 months.
- Need to customize policy databases such as Child Info, KENINFO to address education needs.
- Finalize the school mapping to be instrumental in education planning and management.

## **Experiences and Lessons Learnt**

- Decentralization of Data Processing
- Monthly Data Submission using SMS–Mobiles
- Continuous re–training (basic and analysis) both at HQ and regional offices
- User expectations

## Required Support

- Staff capacity building in specialized ICT courses.
- Development or customization of EMIS data analysis tools for planning and policy decision
- Acquisition of modern ICT hardware for data collection and processing
- Development of an EMIS online data capture system
- Procurement of computers and printers for the regional areas (province and district staff).

## Conclusion

- EMIS Implementation is on-going and is expected to be commissioned by August 2007.
- Review of the ICT Policy and Strategy for Education to include governance and systems management which are critical for education planning and management
- There is need for continuous monitoring and evaluation mechanism in the procedures for data collection to enhance reliability and accuracy of information
- Support is needed for complete EMIS Roll out and utilization of the systems in general

11) Synthesis, *Pierangelo B. Alejo*



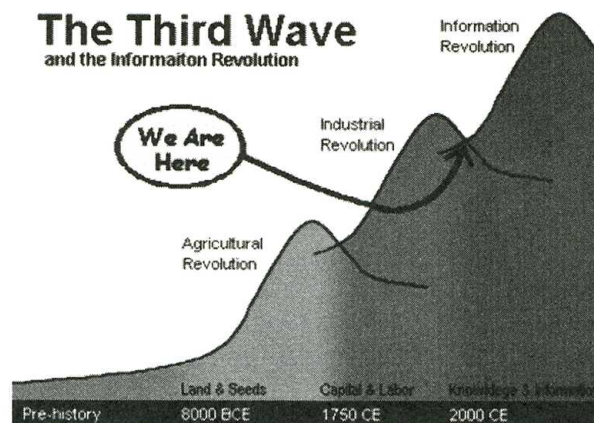
\* SYNTHESIS \*

Educational Planning & Management  
Through the Use of ICTs

Third Millennium Challenges Facing Six Countries  
UNESCO KEDI STUDY VISIT ROK-FIT  
July 10-13, 2007  
Republic of Korea

**Pierangelo B. Alejo**  
*Education Specialist, Flexible Learning Solutions Unit*  
*SEAMEO INNOTECH*

**The Third Wave**  
and the Information Revolution



Millennium Development  
Goal 2  
Universal Primary Education  
**EFA 2015**

Text as readable or spoken words, as digital  
text, as hypertext...we know ICT has to do  
with...

- Information
- Knowledge
- Communication
- Learning
- Technology
- Tools/System

# Computers

## USD\$100 Laptop





# Connectivity



The Web as the  
biggest info,  
knowledge,  
learning ICT  
platform.

A word cloud centered around the text "Web 2.0". The words are arranged in a circular pattern around the central text. The words include: Open Source, Flexible Learning, FOSS, YouTube, Wikis, Blogs, Ajax, E-Illuminate Live, u-learning, Flickr, blended learning, SecondLife, Google, Moodle, MySpace, Joomla, and VOIP.

Open Source

Flexible Learning

FOSS

YouTube

Wikis

Blogs

Ajax

E-Illuminate Live

u-learning

Flickr

blended learning

SecondLife

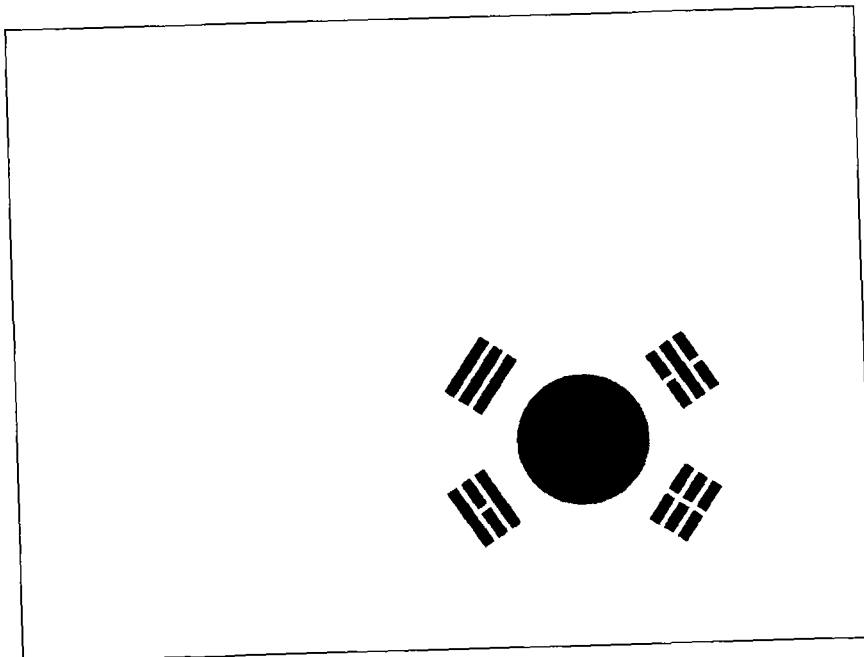
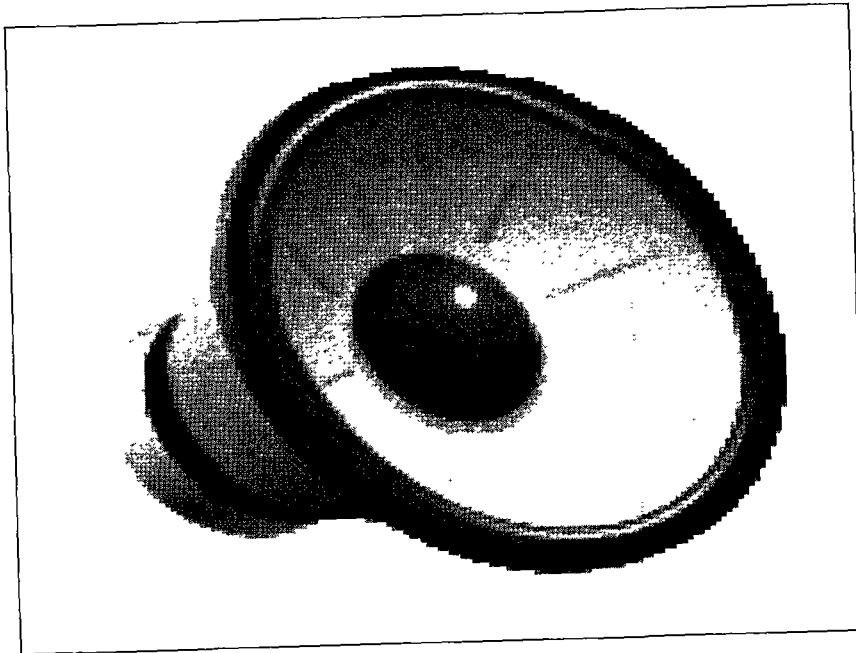
Google

Moodle

MySpace

Joomla

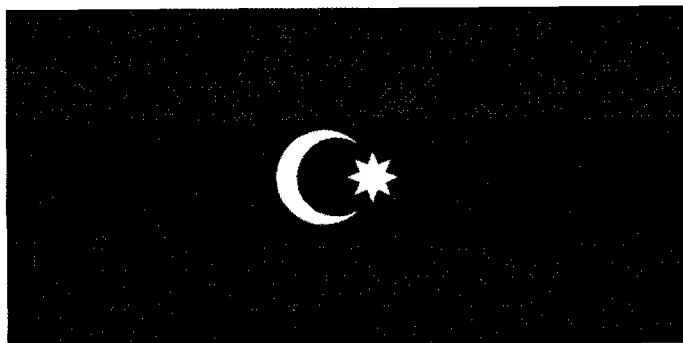
VOIP



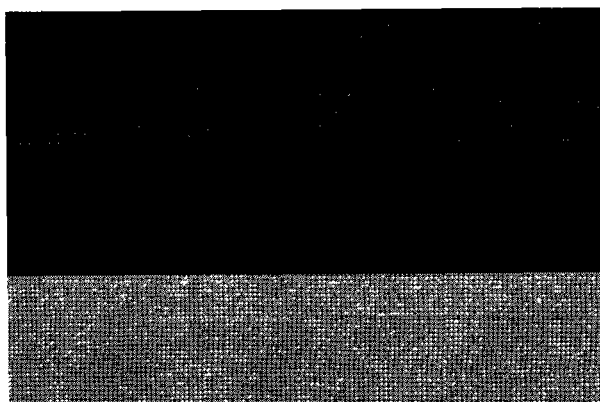
UN Secretary  
General  
Mr. Ban Ki-moon

You

# Azerbaijan



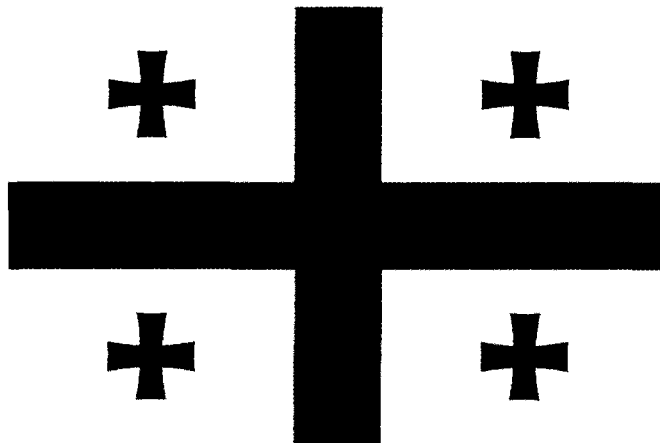
# Armenia



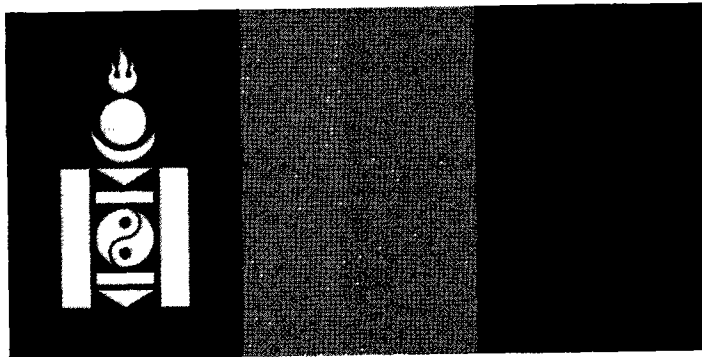
Uzbekistan



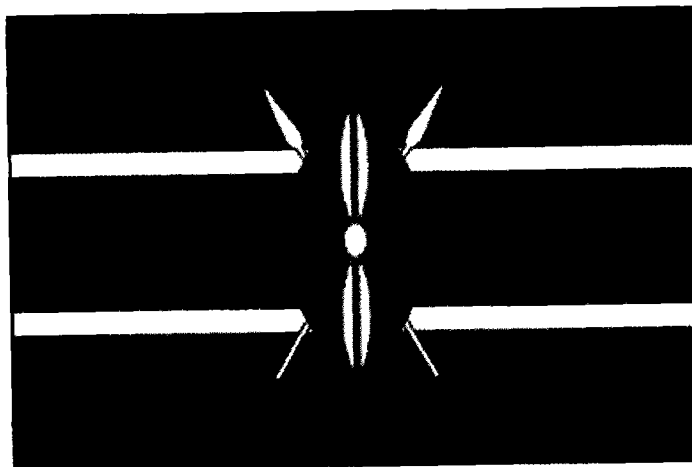
Georgia



# Mongolia



# Kenya



## Guideline

- Education structure and general education issues and challenges
- Use of ICT in education sector
- Use of ICT in education planning and management
- EMIS
- Best practices and failures
- Support or help needed from others
- Other helpful experiences

## Annex A: Matrix for discussion and country/case presentation

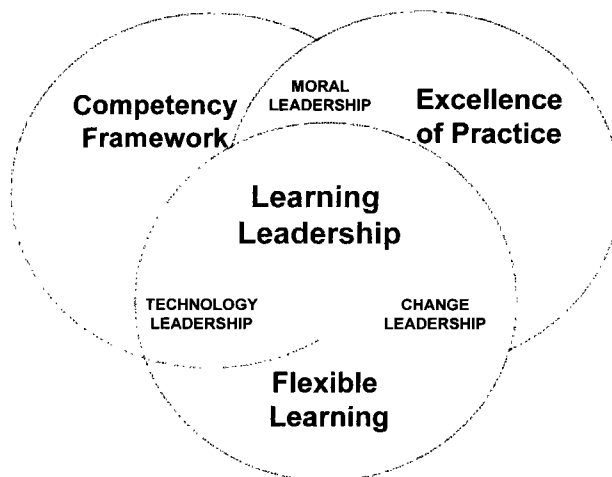


# Questions

## Three Tracks...

- Increase/establish ICT conditions
- Build knowledge society/economy
- Improve EMIS

# Technology Education



A New Paradigm of Excellence in School Leadership  
for Southeast Asia – Pierangelo B Alejo

ICT ODL

FLEXIBLE LEARNING

- e-learning
- distance education
- u-learning
- blended learning

Flexible Learning is  
Empowerment



“Empowerment”  
means some of us,  
most of us and  
eventually all of us  
take the lead in  
one’s and others’  
learning.

According to  
Sergiovanni (1992,  
Moral Leadership)

**new leadership, not  
more leadership is key  
to improving schools.**

# Learning Leadership



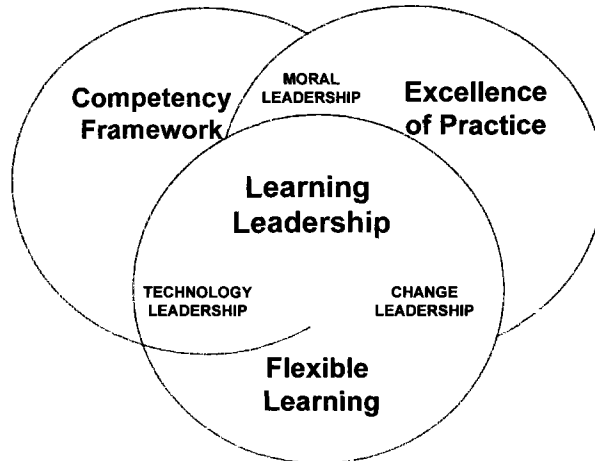
# Learning Leadership

via Flexible Learning

is an all embracing synthesis of  
what learning leaders do and  
who they really are...

moral  
dimension

influence  
dimension



A New Paradigm of Excellence in School Leadership  
for Southeast Asia – Pierangelo B Alejo

12) Some Food for Thought in ICT4E, *Bong Gun Chung*

# **Some Food for Thought in ICT4E**

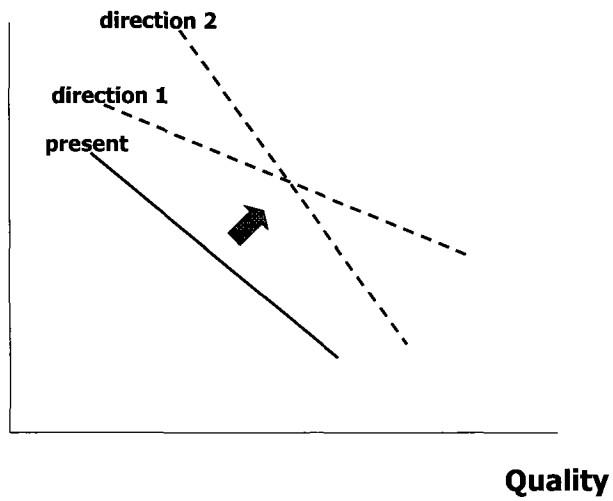
**Bong Gun Chung, Ed.D.  
KEDI/MoEHRD**

## **Conceptual Frames of 6 Presentations**

<b>Subtopics</b>	<b>Educational System/Reform</b>	<b>ICT for e-Learning</b>	<b>ICT for Management</b>
<b>Environments</b>			
<b>Educational Changes</b>	Indigenous System	Knowledge	Efficiency
<b>Economic &amp; Social Changes</b>	Globalization	Competitiveness	Capacity Building

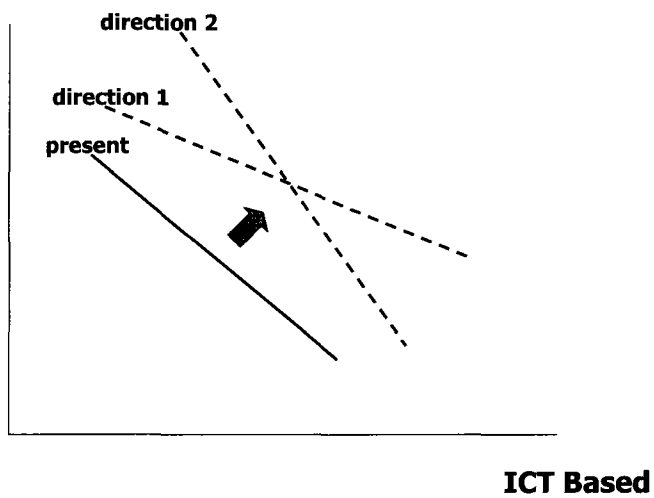
## The Trade-Off 1

Equity



## The Trade-Off 2

Conventional

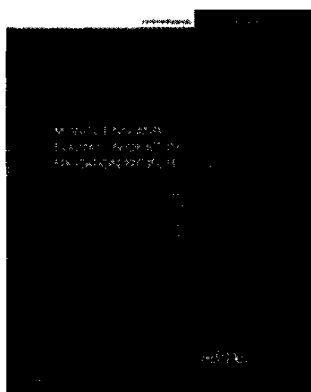




## Resources : Where to Get It?

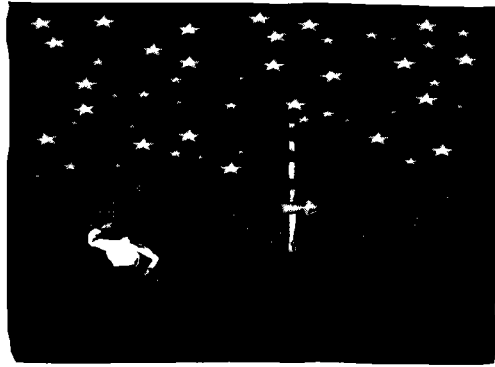
	Domestic	Foreign
Education	Ed Budget Ed Tax	Int'l Org's
Industries	Contribution Public Private P	MNC's

## Best Practices : Dos & Don'ts



<http://www.infodev.org>

## **Concluding Remark**



**Pls, find your own way!**

**What to get from Korean  
Experiences ?**

**How do you analyze it?**

**13) Discussion on Field Visits, Issues, Best Practices by Pierangelo B. Alejo**

## Discussion on visits, issues and best practices

Pierangelo B. Alejo  
Education Specialist, SEAMEO INNOTECH



- KERIS; MoEHRD; Seoul Sinhak Elementary School; Incheon Buwon Middle School; Incheon Metropolitan Office of Education
- Issues & Best Practices
- Flexible Learning Solutions

## Guide Questions

- What impressions, new knowledge and learning did we gain from our visit to \_\_\_\_ ?
- Where or in what aspect of \_\_\_\_ can we find its best features/services/success stories?
- Any possible area for improvement or point of weakness?
- How else can \_\_\_\_ help motivate/stimulate and sustain the interest/engagement of stakeholders (teachers/staff/officials/etc).

## Post Visit Discussion

**KERIS : reactions,  
feedback, comments,  
learning gained?**

# Post Visit Discussion

MoEHRD : reactions,  
feedback, comments,  
learning gained?

# Post Visit Discussion

Seoul Sinhak : reactions,  
feedback, comments,  
learning gained?

# Post Visit Discussion

Incheon Buwon : reactions,  
feedback, comments,  
learning gained?

# Post Visit Discussion

Incheon MOE: reactions,  
feedback, comments,  
learning gained?

# Best Practices & Issues

## Best Practice

1

ROK's openness,  
willingness

# Best Practice

## 2

Government, Inter-  
Org/Office Support

# Best Practice

## 3

NEIS operations and  
maintenance



# Best Practice

## 4

Initiatives, try-outs in  
eLearning / uLearning

# Best Practice

## 5

Credit Banking in  
Higher Education

# Issue 1

Clarify two things: ICT  
in Education in  
general and ICT  
application in planning  
and management,  
e.g., EMIS

# Issue 2

Motivation of teachers,  
staff, stakeholders et.  
al.

## Issue 3

Passion for educ is  
good, but educ  
demand overload for  
students?

## Issue 4

No negative aspect  
reported, area for  
improvement?

# Issue 5

Thank you for showing  
and sharing us WHAT  
you have but, HOW?

# Recom 1

English version of  
NEIS in intro webpage

## Recom 2

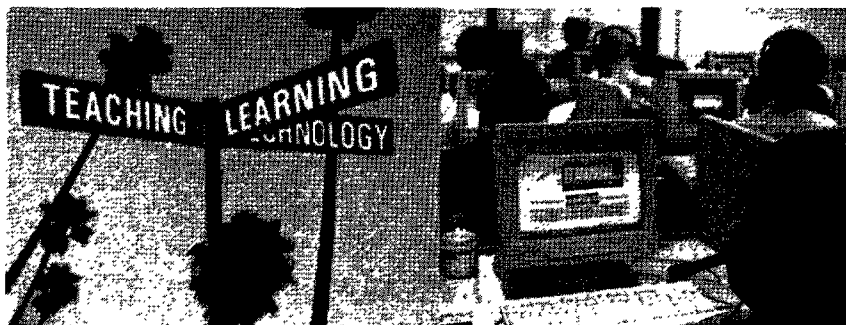
Determine or maintain,  
reasonably demanding  
policies and  
curriculum

## Recom 3

ROK-FIT Phase 2  
Countries suggested  
to focus on capability  
building  
activities/projects

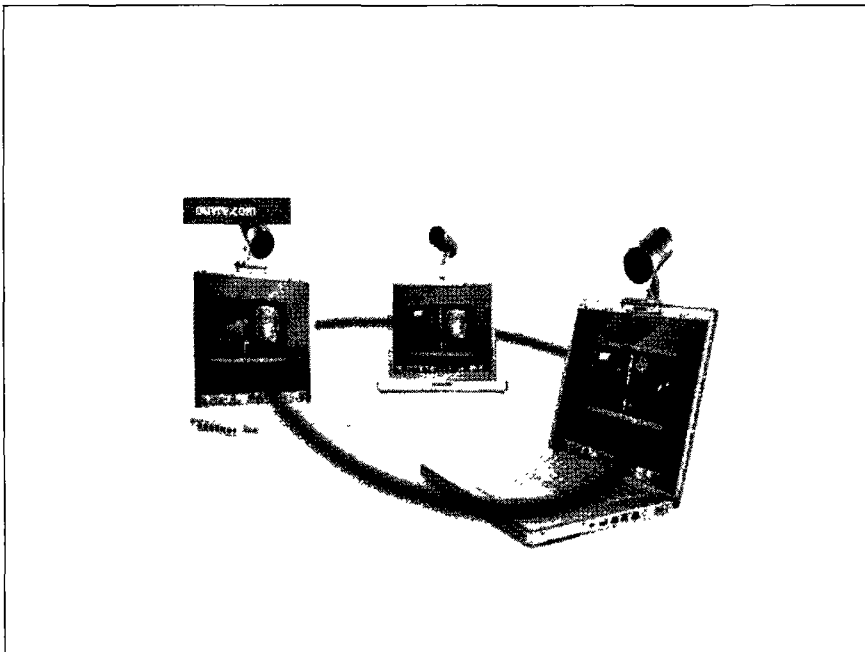
# **LEARNING** while **DOING**

Competency-Based  
Education  
Leadership  
Courseware  
  
(CONTENT)



## Blended Learning Works

- various expertise and best practices
- fusion of traditional and non-traditional modes of training delivery
- self-paced
- collaborative
- inquiry-based
- transcends distance while on the job

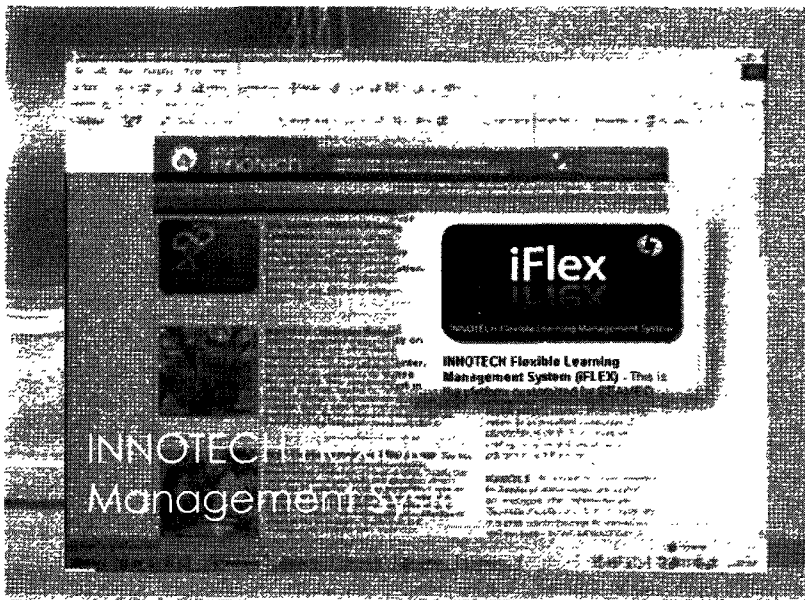
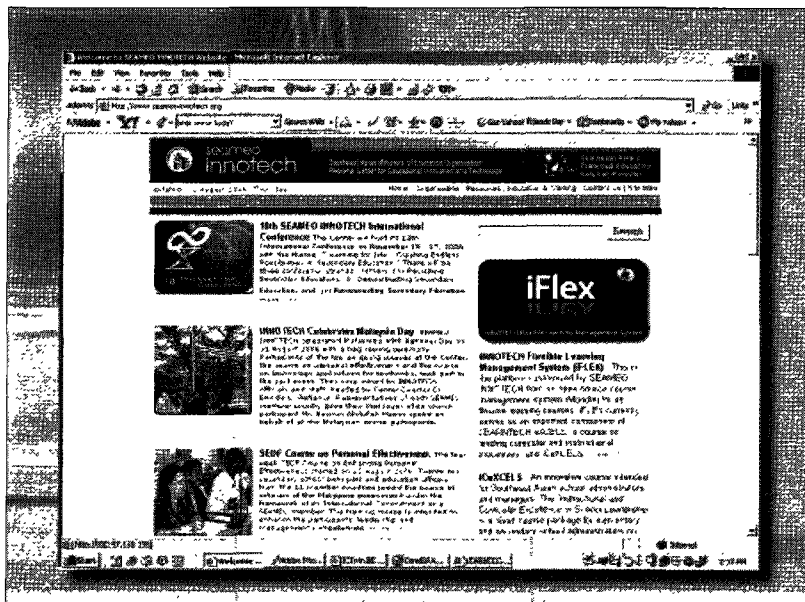


- e-moderators (Salmon)
- e-coaches (Michelet)
- e-mentor for online learning support:

## Flexible Learning Tutors

(SEAMEO INNOTECH + Partners)





Participants

Assignments

Chats

Forums

Resources

Advanced search

Grades

Edit profile

Change password


No messages waiting

Messages...

(last 5 minutes)

Ben Taylor

Topic outline



Pierre Alejo's Class

Online Schedule:

Wednesday, 9am to 12nn

Make Up:

Monday, 9am to 12nn

Interact

Submit Requirements

Access Resources

MyForum

MyAssignment

MyReflection

MyActionPlan

MySelf-Rating

MyCourse Evaluation

MyResources

HARVARD EDUCATIONAL REVIEW

username: 735733

password: harvard

MYASCD

username: 12779@AK.L

password: 09\_jk\_201

Video tip of the week

MyReadings

(No news has been posted yet)

Post-First Module Self-Rating Competency Checklist

Monday, 12 February (11:55 AM)

First Module Assignment

Monday, 19 February (11:55 AM)

Go to calendar...

New Event...

Activity since Monday, 20 January 2007, 04:45 PM

Full report of recent activity...

Course updates:

Deleted Assignment

Added Assignment: First Module Assignment

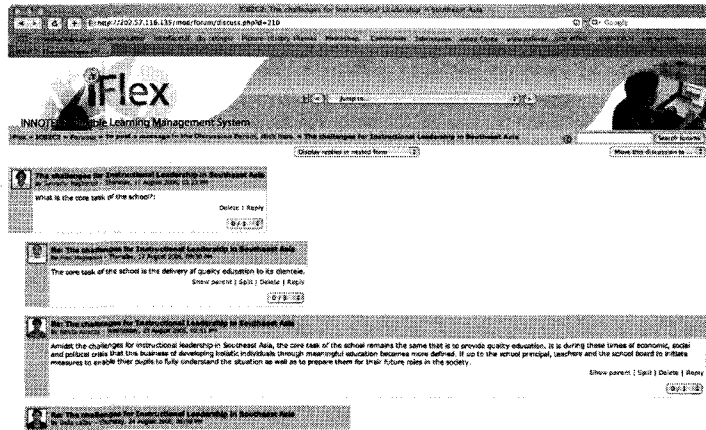
Assignments submitted:

31 Jan, 12:10 Grace Sarenogon Pre-First Module Self-Rating

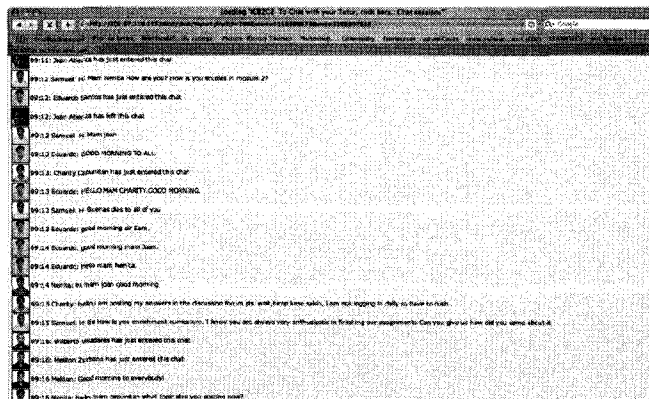
## LEARNING online through (MEDIUM)











- ASYNCHRONOUS DISCUSSION or MyForum
- SYNCHRONOUS DISCUSSION or MyChat
- ONLINE RATING (MARKING) AND GIVING OF PROMPT, ENCOURAGING FEEDBACK TO FLEXIBLE LEARNERS (on submitted requirements)


# MyForum in iFLEX




# MyChat in iFLEX



Interact	Submit Requirements	Access Resources
MyForum 	MyAssignment 	MyResources 
MyChat 	MyReflection 	HARVARD EDUCATIONAL REVIEW username: 735733 password: harvard
	MyActionPlan 	MYASCD 
	MySelf-Rating 	username: 12779@XK_L password: 08_jq_au Video tip of the week
	MyCourse Evaluation 	MyReadings 


**Philip Purnell**  
 Wednesday, 13 September 2006, 08:41 PM
 Grade: 3 / 3


Trebuchet 1 (8 pt)
 


Dear Cristina:

Thanks again for your very prompt submission of your Module Assignment 2. Another very impressive output. The matrix outlining your proposed Curriculum Enrichment Plan for each of the First Year Subject areas clearly demonstrates your mastery of the critical competencies related to curriculum leadership covered in Module 2 of the IC-EXCELS course. Your reflection on

Path:

[Save changes](#)
[Cancel](#)
[Save and show next](#)
[Next](#)


**Cristina Buenafe**  
 Thursday, 7 September 2006, 01:44 PM (24 days 6 hours early)
 


 MY\_ASSIGNMENT\_module\_2\_By\_CRISTINA\_G\_BUENAFE.doc

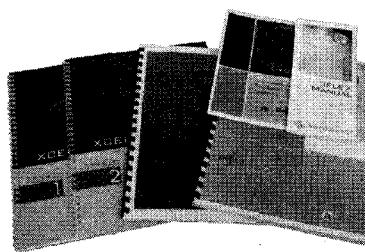


Instructional and Curricular Excellence in  
School Leadership for Southeast Asia

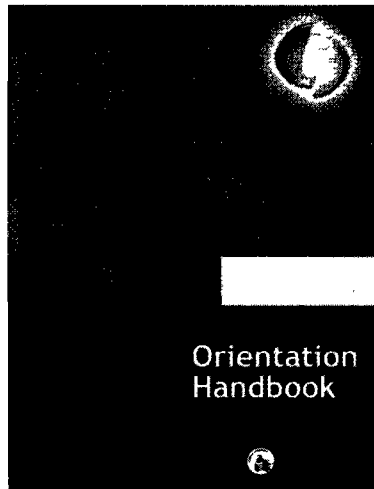


## Tutor's/Learner's Kit

- Modules 1 & 2
- Required Readings
- Orientation Handbook
- Brochure
- iFLEX Manual
- Pen

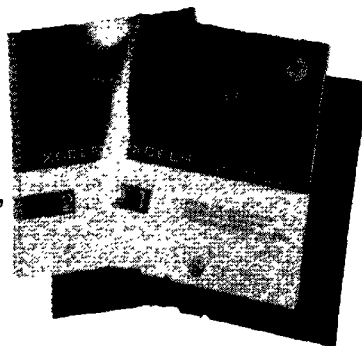


# Orientation Handbook



## ICeXCELS Modules

- The ICeXCELS one-month course is comprised of two self-learning modules in print
- Module 1 - Affirm the Instructional Leadership Roles and Functions of a School Head, and
- Module 2 - Lead Curriculum Implementation and Enrichment



# iFLEX Manual

- What can I do with iFLEX?
- Instructions for performing common tasks




iFLEX  
MANUAL



## Course Requirements

- Module Assignment (Let's Apply What You've Learned) p. 94 of Module 1 and p. 79 of Module 2
- Participation in online discussion (MyForum and/or MyChat)
- End-of-course learning portfolio Reflection Paper following criteria on pp. 13–14 of Handbook
- End-of-course Action Plan following Annex F of Handbook



INNOTechnologies Learning Management System

You are logged in as **Erin** (Logout)

[Turn student view off](#)

**Participants**

Advanced search

Grades

Edit profile

Change password


Online messages (last 5 minutes)

None

No messages waiting

My messages...

**Topic outline**



**Dr. Erlinda C. Pefianco's Class**

Online Schedule:  
Friday, 2pm to 3pm

**MYFORUM**

POST AND REPLY TO TOPICS

**MYCHAT**

TALK REAL TIME

**MYASSIGNMENTS**

SUBMIT HERE

**MyActionPlan**

SUBMIT YOUR ACTION PLAN HERE

**MyReflection**

SUBMIT YOUR REFLECTION PAPER

**Assigned Readings**

Please download the following files. These are required readings for your class. Simply click on the title of the document to download.

- Tasmania Profile of School Heads
- Teacher Competency Framework
- Basic Education Sector Reform Agenda
- Korean Research on National Curriculum

**Upcoming Events**

There are no upcoming events

Go to calendar...

New Event...

**Calendar**

February 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

**Week 1 - Excellence of Practice in School Leadership Tip**

**Participants**

Assignments

Chats

Forums

Resources

Advanced search

Grades

Edit profile

Change password


No messages waiting

Messages...

Online messages (last 5 minutes)

New Taylor

**Topic outline**



**Pierre Alejo's Class**

Online Schedule:  
Wednesday, 9am to 12nn  
Make Up:  
Monday, 9am to 12nn

**Interact**

MyForum

**Submit Requirements**

MyAssignment

MyReflection

MyActionPlan

MySelf-Rating

MyCourse Evaluation

**Access Resources**

MyResources

HARVARD EDUCATIONAL REVIEW  
username: 735732  
password: harvard

MYASCO  
username: 12775@KK.L  
password: 08\_ja\_01

Video tip of the week

MyReadings

**Assigned Readings**

(No news has been posted yet)

Post-First Module Self-Rating Competency Checklist  
Monday, 12 February (11:55 AM)

First Module Assignment  
Monday, 19 February (11:55 AM)

Go to calendar...

New Event...

**Activity since Monday, 29 January 2007, 04:45 PM**

Full report of recent activity...

**Course updates:**

Deleted Assignment

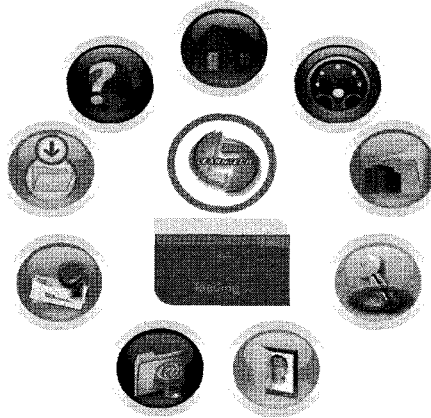
Added Assignment: First Module Assignment

**Assignments submitted:**

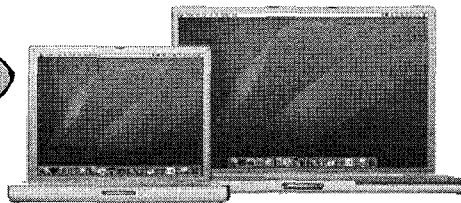
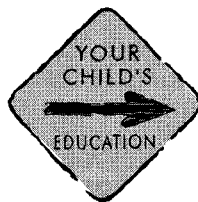
31 Jan, 12:10  
Grace Sarenogon  
Pre-First Module Self-Rating

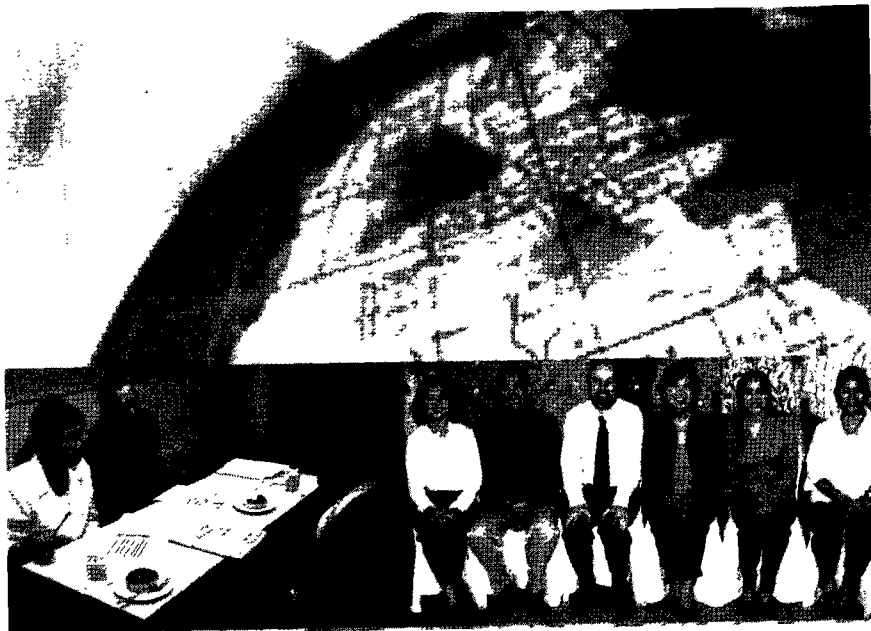


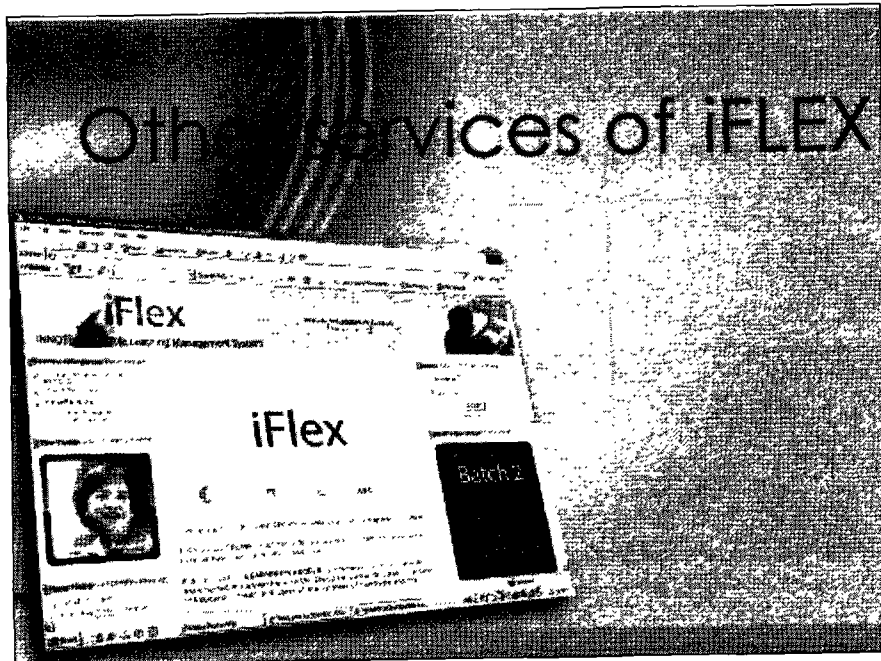
## Putting Premium on Flexibility



## Computer and eMail





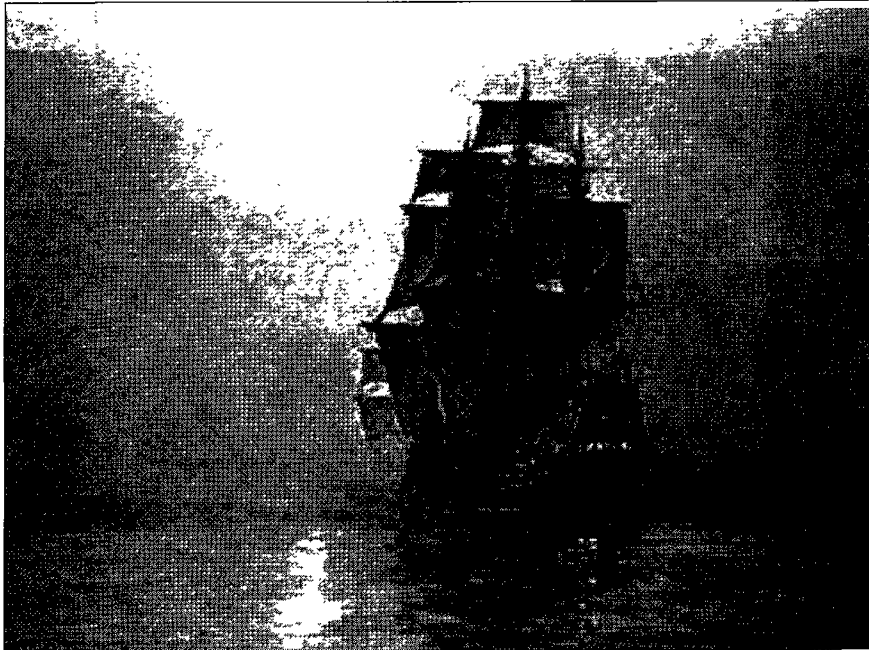


## Success Indicators

- 100% pass rate
- 97% of learners indicated the course was "Effective to Very Effective" in the following areas:
  - Instructional Design and Delivery
  - Assessment and Evaluation of Student Learning
  - iFLEX Organisation and Design
  - Flexible Learning Tutor
  - Learner Support and Access to Media Resources
- Majority of learners have low knowledge of computer use prior to starting course. High pass rate demonstrates this is not a hinderance in completing the course.

## © The A- of Flexible Learning

- (a) Action Research. Action Learning principles.
- (b) Quality Assurance: Content & Instructional Design.
- (c) Competency-based training courses/modules.
- (d) CMC model and LMS platform.
- (e) Flexibility in Technology Options.
- (f) Use of Rubrics for Online activity; *Netiquette*
- (g) More teaching than testing
- (h) Access to Resources
- (i) Completion, Revalida and Credit



# Education Leaders



#### [Annex 4] Survey Results for the Reflection on the Study Visit

KEDI designed a Study Visit Evaluation Survey where participants were asked about the management of the Study Visit programme. The questionnaire asked the delegates to evaluate on their overall view of the programme as a whole, contribution of the study visit to developing their education system, usefulness of the information, and the new information they have acquired. In details, they were asked about the level of satisfaction on the presentation on the introduction of Korea Education, the field visits to KERIS, MOE&HRD, and Schools, synthesis and county case presentations and the suggestions for improvements if any.

Generally the participants indicated that that the study visit programme exceeded their expectations (86.7%). On a five-point scale where 5 is the highest satisfaction, 93.3% of the participants rated 5 that the study visit programme contributed to developing their education system and also 86.7% of them rated 5 that they obtained the useful information according to their needs. 93.4% of the participants rated 5 and 4 that they fairly acquired new information (See Table a).

On a four-point scale where 4 is the most excellent, 93.3% of the participants rated 4 that the introduction of Korean Education was excellent and helped them to gain insight on Korean Education. 86.7% of them rated 4 that they found the field visits to KERIS, MOE&HRD, and schools as the excellent experiences. 66.7% of the participants rated 4 that the synthesis paper and country case presentation were excellent and (33.3%) of them rated 3 that they were good (See Table b).

The comments and recommendations of the participants are as follows:

*"A more regular types of study visit to continue this already started process and lay a firm foundation for the use of ICT and EMIS in our respective countries..."*

*"This study visit was classic and was indeed very impressed. Study visit was a wealth of knowledge and experience sharing. Thanks for very qualified KEDI staff for their kind support and guidance.."*

*"Every activity were organized very well and wish good success for your future development."*

*"Good, well-organized preparation."*

*"I have satisfied the programme as well the visit very much."*

**[Table a] Overall Evaluation**

1 is the minimum (not satisfactory) and 5 is the maximum (very satisfactory).

Questionnaire	Satisfaction	Number	Percentage (%)
1. Extent to which the study visit programme contribute to developing your education system	⑤	14	93.3
	④	1	6.7
	③	0	-
	②	0	-
	①	0	-
2. Usefulness of the information that you have obtained	⑤	13	86.7
	④	2	13.3
	③	0	-
	②	0	-
	①	0	-
3. Extent to which you have acquired information that is new to you	⑤	7	46.7
	④	7	46.7
	③	1	6.6
	②	0	-
	①	0	-
4. Overall assessment of the programme	⑤	13	86.7
	④	2	13.3
	③	0	-
	②	0	-
	①	0	-

The participants were also asked to give suggestions on how the future study visit could improve its programme and among their recommendations were:

*“I would recommend to include more hands-on activities into the programme.”*

*“We need to have a follow-up country visit. However, each country to suggest areas of improvement to be carried out before and reporting done. In this way, we could share advances in use of ICT across the countries.”*

*“To provide more information not only about achievements in concrete field but about tools and mechanisms used to reach goals.”*

*“I would recommend to have more so-called field work included in the program – more practical things.”*

**[Table b] Detailed Programme**

1. Poor 2. Fair 3. Good 4. Excellent

<b>Programme</b>	<b>Satisfaction</b>	<b>Number</b>	<b>Percentage (%)</b>
Introduction of Korean Education	④	14	93.3
	③	1	6.7
	②	0	-
	①	0	-
Field Visits (KERIS, MOE&HRD, Schools)	④	13	86.7
	③	2	13.3
	②	0	-
	①	0	-
Synthesis paper and country case presentations	④	10	66.7
	③	5	33.3
	②	0	-
	①	0	-



