NISE D－202

Final Report of the 23rd Asia-Pacific International Seminar on Special Education

26-31 October 2003, Yokosuka, Japan

Japanese National Commission for UNESCO
The National Institute of Special Education

Final Report of the 23rd Asia-Pacific International Seminar on Special Education

26-31 October 2003, Yokosuka, Japan

Japanese National Commission for UNESCO
The National Institute of Special Education

Table of Contents

Page

Introduction *1*

Seminar Participants *6*

Seminar Schedule *8*

Addresses

National Institute of Special Education *11*

Japanese National Commission for UNESCO *13*

Keynote Address *15*

Country Reports

Australia *19*

Bangladesh *24*

China *31*

India *36*

Indonesia *43*

Japan *47*

Malaysia *54*

Nepal *58*

New Zealand *64*

Pakistan *75*

Philippines *79*

Republic of Korea *85*

Sri Lanka *88*

Thailand *93*

The List of Presenters at the Poster Session *96*

Introduction

1. Preface

The National Institute of Special Education (NISE), as one of the centers for cooperation with the Asia and the Pacific Programme of Educational Innovation for Development (APEID), has sponsored the "APEID Seminar on Special Education" since 1981. However since fiscal 2002, the Seminar has been held under the title of "Asia-Pacific International Seminar on Special Education" jointly by the NISE and the Japan UNESCO Committee. The current seminar in FY2003 is the second under this title, and the 23rd international seminar in the aggregate since the 1st APEID Seminar on Special Education was held.

2. This Year's Seminar

The 23rd Asia-Pacific International Seminar on Special Education was held from October 26 to 31, 2003 at the NISE under the theme "Educational Support for Children with Disabilities and the Utilization of ICT". As the first trial, in addition to reports by delegates from participating countries, opportunities for research presentations were created through poster sessions and presenters from inside and outside Japan were invited. Furthermore, paralleling the research presentations and country reports, businesses developing or marketing educational and welfare equipment for the disabled displayed their equipments.

Delegates from thirteen countries, Australia, Bangladesh, China, India, Indonesia, Malaysia, Nepal, New Zealand, Pakistan, the Philippines, South Korea and Sri Lanka and Thailand were invited to the seminar on the nominations of a UNESCO committee comprised of representatives from each country and one Japanese delegate. In addition to many NISE staff, there were seven foreign poster presenters and five other foreign participants, fourteen poster presenters and nineteen other participants from Japan. The overview of the Seminar is reported as follows.

3. Seminar Overview

1) Theme

"Educational Support for Children with Disabilities and the Utilization of ICT"

At the beginning, a draft was examined to clarify the definition of "Educational Support for Disabled Children by Effectively Utilizing ICT and Assistive Technology" with the hope that it would stimulate discussion by participants, not only on the practical application of so-called high-technology in education for disabled children, but the application of simple technologies as well. However, it soon became apparent that consensus on assistive technology between persons in the field of special education would be difficult. Whereas, there was a possibility that people might limit its interpretation to the practical application of the most-up-to-date technology if only the wording "effective utilization of ICT" was used. Moreover, since practical application of the most-up-to-date technology does not always permeate into special education in Asian and Pacific

nations, and faced with the prospect of the seminar becoming one-sided to some nations to be invited, the above-mentioned expression was adopted. By including the definition in a written request for reporters from each country, documentation and by inviting research presentations for poster sessions, we endeavored to create a seminar true to the original objective.

2) Sponsors

National Institute of Special Education (NISE)
Japan UNESCO Committee

3) Schedule and Location

Schedule: October 26 to 31, 2003

October 26 (Sun.): Arrival of overseas delegates
October 27 (Mon.): Opening ceremony, keynote lecture, poster sessions, equipment display
October 28 (Tue.): Country reports, equipment display
October 29 (Wed.): Country reports, general discussion, closing ceremony
October 30 (Thu.): Institutional visit (National Institute of Special Education, National Kurihama School for Children with Disabilities)
October 31 (Fri.): Departure of overseas delegates

Location: National Institute of Special Education

4) Keynote Lecture

In the morning of October 27 following the opening ceremony, Dr. Takuro Hatakeyama, professor of the Faculty of Care and Rehabilitation of the Seijo University, gave a keynote lecture on the theme "Effective Utilization of Assistive Equipment for the Disabled". Details on the lecture will be shown later. Professor Hatakeyama discussed in detail the importance of effectively utilizing assistive equipment for the disabled through various concrete examples and practical experience. Many in the audience were deeply impressed by his presentation.

5) Research Presentations Through Poster Sessions

In the afternoon of October 27, research presentations were conducted through poster sessions.

As mentioned earlier, we invited the public from inside and outside Japan, including researchers registered in research and educational institutions in the field of special education and practicing educators. However, despite a total twenty-nine applications - nineteen domestically including five NISE staff and ten overseas - three cancelled by the appointed day. On the other hand, presentations were also given and open-to-all by the delegates Mr. Ishaque Bhuiyan from Bangladesh and Mr. Diwakar Awasthi from Nepal, bringing the total number to twenty-eight. The names and themes of each presenter are listed in a separate table. All presentations were given entirely in English.

6) Country Reports

All day October 28 and in the morning of 29 October, country reports were made by fourteen delegates from the participating countries including Japan. The reports discussed the policy and measures concerning information and communication technology of each country, the policy and current state of introduction into educational fields, and the current state and prospects of effective utilization of ICT in education for the disabled children. The following country reports were presented.

Australia: Dr. Martyn Forrest
Secretary, Tasmanian Department of Education

Bangladesh: Mr. Ishaque Bhuiyan
Managing Director (Joint Secretary), National Foundation for Development of the Disabled Persons, Ministry of Social Welfare

China: Ms. Chen Yunying
Director, Special Education Division, China National Institute for Education Research

India: Dr. Janak Verma
Assistance professor, D.E.G..S.N., National Council of Educational Research and Training

Indonesia: Mr. Mudjito
Director of Special Education, Directorate-General of Primary and Secondary Education, Ministry of National Education

Japan: Dr. Nakamura Hitoshi
Director, Department of Educational and Information Technology, The National Institute of Special Education

Malaysia: Mr. Kamaruzaman bin Mahayiddin
Assistant Director, Information and Communication Technology and SMART School for Special Education Unit

Nepal: Mr. Diwakar Awasthi
Deputy Director (Sectional Chief), Special Education Section, Department of Education Sanothimi, Bhaktapur

New Zealand: Mr. Cindy Diane Stewart
Occupational Therapist/Technology Co-ordinator, Special Education, Ministry of Education, Whangarei

Pakistan: Ms. Musarrat Abid
Deputy Director, National Institute of Special Education, Directorate General of Special Education, M/o Women Development, Social Welfare & Special education, Islamabad

Philippines: Mr. Romeo M. Mina
Education Program Specialist, II Special Education Division, Bureau of Elementary Education

Korea: Ms. Soo-kyoung AN
Educational Researcher, Korea Institute for Special Education (KISE)

Sri Lanka: Mr. Hetti Pathirage Nimal Lakshman
Deputy Director of Education, Ministry of Human Resources Development, Education and

Cultural Affairs

Thailand: Ms. Puangmanee Chaiseree

Chief of Planning and Budgeting Group, Bureau of Special Education Administration, Office of the Basic Education Commission, Ministry of Education

7) Summary Discussion

In the afternoon of October 29, a general discussion was made based on the country reports and presentations through poster sessions and summarized by the chairperson.

According to the country reports, major differences were apparent among countries in policy and measures concerning ICT, the policy and the current state of introduction into educational fields, and the current state and prospects of effective utilization of ICT in education for the disabled children. Nevertheless, everyone agreed that effective utilization of ICT could make its way into education for disabled children. Consequently, in the general discussion, with respect to the establishment of measures at the policy level of and measures for introducing and promoting ICT into education for disabled children - in other words, various measures to secure funding - opinions and proposals not only by the delegates of participating countries but also the NISE staff and other participants were vividly expressed. Some of the opinions:

- Donation of computers by businesses and public organizations: Education does not always require the latest computers; secondhand computers are often enough
- To increase the number of users through universal design and lower cost
- To demonstrate and emphasize models that promote independence in disabled children by effectively utilizing ICT (However, some individuals responded saying that the continuous educational benefits are difficult to demonstrate if cost performance is emphasized, thus the dilemma that productivity should exceed funds invested in the case of severely disabled children.)
- To promote networking with NGOs

Furthermore, opinions on the feasibility of cooperation among participating nations and ways to realize the goals were also exchanged.

After the chairperson summarized the discussions, the Closing Ceremony was held.

8) Equipment Display

In the afternoon of October 27 and all day October 28 during the research presentations through poster sessions and country reports, businesses developing or marketing educational and welfare equipment for the disabled displayed their products.

9) Institutional Visits

In the morning of October 30, the delegates from the participating countries and other foreign participants visited the NISE and the National Kurihama School for Children with Disabilities. They visited and observed the Institute's exhibition room where various assistive devices through

effective utilization of information and electronic technology are on display as mentioned in the Japanese delegate's country report, and in the school, not only observed the facility and equipment, but also actual classes for infants and children in progress.

Nakamura Hitoshi

(Director, Department of Educational and Information Technology)

Seminar Participants

Delegates of Participating Countries

Australia

Dr. Martyn Forrest

Secretary,

Tasmanian Department of Education

Bangladesh

Mr. M. Ishaque Bhuiyan

Managing Director (Joint Secretary),

National Foundation for Development of the Disabled Persons (Ministry of Social Welfare)

China

Ms. YunYing Chen

Director of Special Education Division,

China National Institute for Education Research

India

Dr. Janak Verma

Reader,

D. E. G. S. N., National Council of Educational Research and Training, (NCERT)

Indonesia

Mr. Mudjito

Director,

Directorate of Special Education, Directorate General of Primary and Secondary Education,

Ministry of Education INDONESIA

Japan

Dr. Nakamura Hitoshi

Director, Department of Educational and Information Technology,

The National Institute of Special Education

Malaysia

Mr. Kamaruzaman bin Mahayiddin

Assistant Director,

Information and Communication Technology and Smart School for Special Education Unit,

Special Education Department, Ministry of Education MALAYSIA

Nepal

Mr. Diwakar Awasthi

Deputy Director (Section Chief),

Special Education Section, Department of Education NEPAL

New Zealand

Ms. Cindy Diane Stewart

Occupational Therapist/ Technology Co-ordinator,

Special Education, Ministry of Education NEW ZEALAND

Pakistan

Ms. Musarrat Abid

Deputy Director,

National Institute of Special Education, Directorate General of Special Education, M/o Women Development, Social Welfare & Special Education, NISE, PAKISTAN

Philippines

Mr. Romeo M. Mina

Education Program Specialist II,

Special Education Division, Bureau of Elementary Education, Department of Education, PHILIPPINES

Republic of Korea

Ms. Soo-kyoung An

Educational Researcher,

Korea Institute for Special Education (KISE), KOREA

Sri Lanka

Mr. Hetti Pathirage Nimal Lakshman

Deputy Director of Education,

Ministry of Human Resources Development, Education and Cultural Affairs, Non-formal and Special Education Branch, SRI LANKA

Thailand

Ms. Puangmanee Chaiseree

Chief of Planning and Budgeting Group,

Bureau of Special Education Administration, the Office of the Basic Education Commission, the Ministry of Education, THAILAND

Schedule of the 23rd Asia-Pacific International Seminar

Oct. 26 (Sun) Arrival in Japan

16:00	Check in Hotel Harbour Yokosuka

Oct. 27(Mon) Registration & Orientation, Opening Ceremony, Keynote Speech, Group Photograph, Poster Presentation & Equipment Exhibition and Welcome Party

8:20	Meeting at hotel lobby (NISE staff escort)
	Leave hotel by bus
9:00	Arrive at NISE
9:00- 9:30	Registration & Orientation
	1.Orientation
	2.Further Information of Seminar Schedule
	3.Registration
	4.Others
10:00 -10:30	Opening Ceremony
	1.Opening Address by Mr. Hosomura, Director General, NISE
	2.Address by Japanese National Commission for UNESCO
10:30 -12:00	Keynote Speech by Dr. Takuro Hatakeyama, Professor, Seijoh University(invited)
	Theme: "(theme to be announced)"
12:00-12:15	Group Photograph
12:15-13:30	Lunch
13:30-17:00	Poster Presentation & Equipment Exhibition
17:15-18:45	Welcome Party at NISE
18:55-	Leave NISE by bus
19:35	Arrive at Hotel Harbour Yokosuka

Oct. 28 (Tue) Discussion

9:20	Leave hotel by bus
10:00 -12:00	Discussion

10:00-10:30 (Australia)

10:30-11:00 (Bangladesh)

11:00-11:30 (China)
11:30-12:00 (India)

12:00 -13:30 Lunch

13:30 -16:00 Discussion

13:30-14:00 (Indonesia)
14:00-14:30 (Japan)
14:30-15:00 (Malaysia)
15:00-15:30 Break 30 minutes
15:30-16:00 (Nepal)
16:00-16:30 (New Zealand)

16:30-17:00 (Pakistan)

17:10 Leave to hotel by bus

Oct. 29 (Wed) Discussion, General Discussion, Summary and Closing Ceremony

9:20 Leave hotel by bus

10:00 Arrive at NISE

10:00-12:00 Discussion

10:00-10:30 (Philippines)

10:30-11:00 (Republic of Korea)

11:00-11:30 (Sri Lanka)

11:30-12:00 (Thailand)

12:00-13:30 Lunch

13:30-15:30 General Discussion

15:30-16:00 Summary

16:00-16:15	Closing Ceremony
16:25	Leave to hotel by bus

Oct. 30 (Thu) Study Visit & Transfer to Shinagawa

9:40-	Leave hotel by bus
10:00	Arrive at NISE
10:00-12:00	Study Visit National Institute of Special Education National Kurihama School for Children with Disabilities
12:00-13:00	Lunch
13:10	Leave to Shinagawa by bus
15:10	Arrive at Shinagawa Prince Hotel

Oct. 31 (Fri) Leave Japan

Check out
Move to Narita Airport

Address

Mr. HOSOMURA Michio
President
National Institute of Special Education

Good morning, to those of you who were kind enough to participate in this Seminar from abroad by representing your countries, and to others who have likewise participated in this Seminar.

In opening the 23rd Asia-Pacific International Seminar on Special Education, I would like to greet you by representing the National Institute of Special Education.

Firstly, I would like to express my deepest appreciation to all of you who have decided to participate in this Seminar.

I am very happy that this year also, we can hold this seminar with the delegates from abroad who are working hard for the development and enrichment of special education in their countries.

NISE has been holding this Seminar every year since 1981, in collaboration with the Japan UNESCO Committee, with the aim of enriching the special education provided in the Asia and the Pacific region.

The Seminar has invited government officials, researchers, educators and others from the countries in the Asia and the Pacific region, and the number of participants from abroad has exceeded 300 in total.

The Seminar has thus been held for over 20 years, and its present name "Asia-Pacific International Seminar on Special Education" has been used since 2002.

This Seminar is being held every year by picking up important themes related to special education, in order to contribute toward the development and enrichment of special education in the Asia and the Pacific region.

This year's 23rd Seminar will be held under the theme "Educational Support for Children with Disabilities and the Utilization of ICT" in consideration of the rapid informatization of the society in recent years.

In this Seminar, presentations will be made on research outcomes, educational practices, administrative measures and others related to the use of information means in the education of children with disabilities in the Asia and the Pacific region. The presentations will be followed by discussions based on such presentations.

I hope that this Seminar becomes a good opportunity for the participants to learn from each other's experiences related to use of information means by children with disabilities, and to advance their relationship of cooperation.

The issues faced by the countries and the problems that they must solve may vary. Moreover, the countries may be tackling special education in different ways. Even then, we believe that we can mutually learn from the efforts made by the countries.

At present, special education in Japan has entered a period of major innovations. In 2001, as part of the Central Government Reform, the Ministry of Education was renamed Ministry of Education, Culture, Sports, Science and Technology, abbreviated MEXT, and the Special Education Division in charge of special education administration was renamed "Special Support Education Division."

As a new directionality of special education in Japan, MEXT has clearly set forth the policy of converting from "special education" to provide education and guidance in special places in accordance with the kind and degree of disability to "special support education" to provide appropriate educational support in meeting with the educational needs of the individual disabled children.

Under this new policy concept of "special support education", the Ministry seeks to take more active measures for the children who require special educational support and who are enrolled in ordinary classes.

In line with such innovations, NISE has started its new role as an Independent Administrative Body since 2001.

NISE will soon undergo a major reorganization. To that end, it has been building a system that it can cope promptly and flexibly with the issues related to special education and special support education faced by Japan.

I believe that it is highly significant that the 23rd Seminar should be held in such a period of major innovations.

I hope that through this Seminar, NISE can cooperate and collaborate with the countries in the Asia and the Pacific region, and carry out international cooperation that would contribute toward the progress of special education in such countries.

I would like to close my address by hoping that the discussions held and the opinions exchanged in this Seminar should be of value especially to those of you who were kind enough to participate from abroad.

Thank you very much.

Address

Welcome Remarks by Mr. SATO Shuji

Senior Specialist, Japanese National Commission for UNESCO
Ministry of Education, Culture, Sports, Science and Technology

Mr. HOSOMURA, President of the National Institute of Special Education,
Distinguished participants,
Ladies and Gentlemen,

On behalf of the Japanese National Commission for UNESCO, as well as the Ministry of Education, Culture, Sports, Science and Technology (MEXT), I am very pleased to extend my warmest welcome to all the participants from Asia and the Pacific Region, here for the opening of this seminar.

The National Institute of Special Education and the Japanese National Commission for UNESCO have been organizing the Asia and Pacific International Seminar on Special Education since 1981. I would like to thank the National Institute of Special Education for its great efforts.

The theme of the seminar this year is "Utilization of ICT and Educational Support for Children with Disabilities," and the objective is focused on contributing to the development of special education in the Asia-Pacific region.

As you know, "the Dakar framework for Action," which was adopted at the World Education Forum in April 2000, is a collective commitment to action for countries and international organizations so as to achieve the goal of "Education for All (EFA)."

When we discuss EFA, it seems that much attention is paid to universal primary education and reduction of the illiteracy rate. And it is indispensable for achieving all that to complete arrangements of an education system for children with some impairments who need special consideration. In this regard, I won't hesitate to say that it is very significant for us in the Asia-Pacific region to link up and to cooperate internationally for the promotion of research on special education.

It goes without saying that the utilization of ICT in Education has been becoming more important recently. The needs of children with disabilities are diverse, and therefore, it is necessary that each child is provided with education which meets his/her needs. Using ICT can make it possible to provide an education improved in terms of both quality and quantity.

Today, experts from 14 countries in the Asia-Pacific region have joined this seminar. I hope you will have significant opportunities to exchange opinions and information. I also hope you will gain results from the seminar and bring those back to your respective countries for further deliberation to see that education, which copes with each student's needs properly, will be provided in the Asia-Pacific region.

Last but not least, I would like to express my sincere appreciation to staff members of NISE who have devoted themselves to the preparation of the seminar. I hope that the seminar will be a great success, and that your stay in Japan will be productive, meaningful and enjoyable.

Thank you very much.

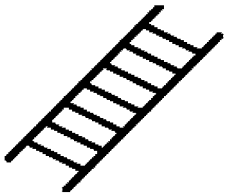
The 23rd Asia-Pacific International Seminar on Special Education
"Utilization of ICT and Educational Support for Children with Disabilities"
October, 27th, 2003 Yokosuka, Japan

Keynote Address

Utilization of Technical Aids for Supporting the Lives of Persons with Disabilities

Takuro Hatakeyama, Ph. D.
Professor, Faculty of Rehabilitation Seijoh University
E-mail: hatakeyama@seijoh-u.ac.jp

1. Preface



We enjoy a convenient and comfortable life by the use of various kinds of tools and technologies. For example, to get something placed on a high place, we use ladders and stools. Likewise, persons with disabilities use ladders called "Assistive Technology" (AT). If they can do something using AT, they will be able to see a new world.

Someone might be thinking that the "ladders" here seem to be centered around hardware such as devices and technologies, but such is not true. Although hardware is important, more important is "software" or the way of thinking and how to utilize it. Below are the key points believed to be important in learning AT.

2. Key points

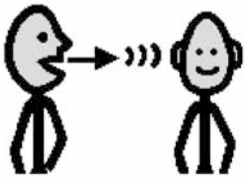
(1) Ideas as to disabilities and independence of life

It is important to correctly understand disability. But more important is to understand that we all have disabilities. Disabilities are not something cannot be indifferent to all of the 'ordinary' people. There are people who wear eyeglasses. But not so many of them think that they have visual 'disabilities'. Another very important thing is to think that we happen to be able to do so many things at now ("Temporary Abled"). What this means greatly changes depending on whether we focus on the young people or the elderly people who will further increase in the future.

It is also important to learn what it means for a person with disability to lead an independent

life. It is a fact that there are views such as that "Independence means that one can do everything on his/her own" or "If one needs others' help, such cannot be said as independence". However, the views are changing greatly, to one that says that if there are things that a person wants to do, there is no reason for him not to seek others' help. What I believe important is to listen to 'what they want' of persons with disabilities, rather than forcing the caregiver's values on them.

(2) Understanding the needs



Persons with disabilities have diverse needs. Moreover, such needs are sometime not apparent. Some needs are hidden deep inside. We sometimes mistake superficial needs for true needs. There are often cases that though our efforts seemed to have succeeded, in time, persons with disabilities realize that "This was not what I wanted". In such cases, the chances are that what we thought were the true needs were not so. Then, is there a person who can tell the true needs from the beginning? The answer is no. Even experts who have many years of clinical experiences cannot identify the true needs so easily. The true needs are something that must be discovered with the efforts of all team members including persons with disabilities, at the center, their family members, helpers, caregivers and others.

(3) Techniques and technical aids

There are often cases where people have diverse knowledge concerning technical aids that use advanced technologies, but lack knowledge of simple techniques.

Even a simple tool could greatly affect a person's power of expression and way of life if it is properly used. It is desirable to acquire basic knowledge of diverse techniques and technical aids, from Low-tech to High-tech.

(4) Adaptive techniques/strategies

The desirable form of assistance is to help persons with disabilities make choices and decisions on their own. In reality, however, there are many cases in which persons with disabilities cannot tell what they should select. The important thing is to give them the ability to select. This ability means for persons with disabilities to refine their various needs and discover their true needs. It also means to discover the specific technologies and assistive devices to secure the assistance matching such needs. In this respect, 'mediators' such as AT coordinators and AT practitioners play a major role. It will be necessary to fully understand the characteristics and ways of use of individual techniques and technical aids. Also required is adaptive techniques or strategies that has taken into account the actual occasions of use.

(5) Support systems

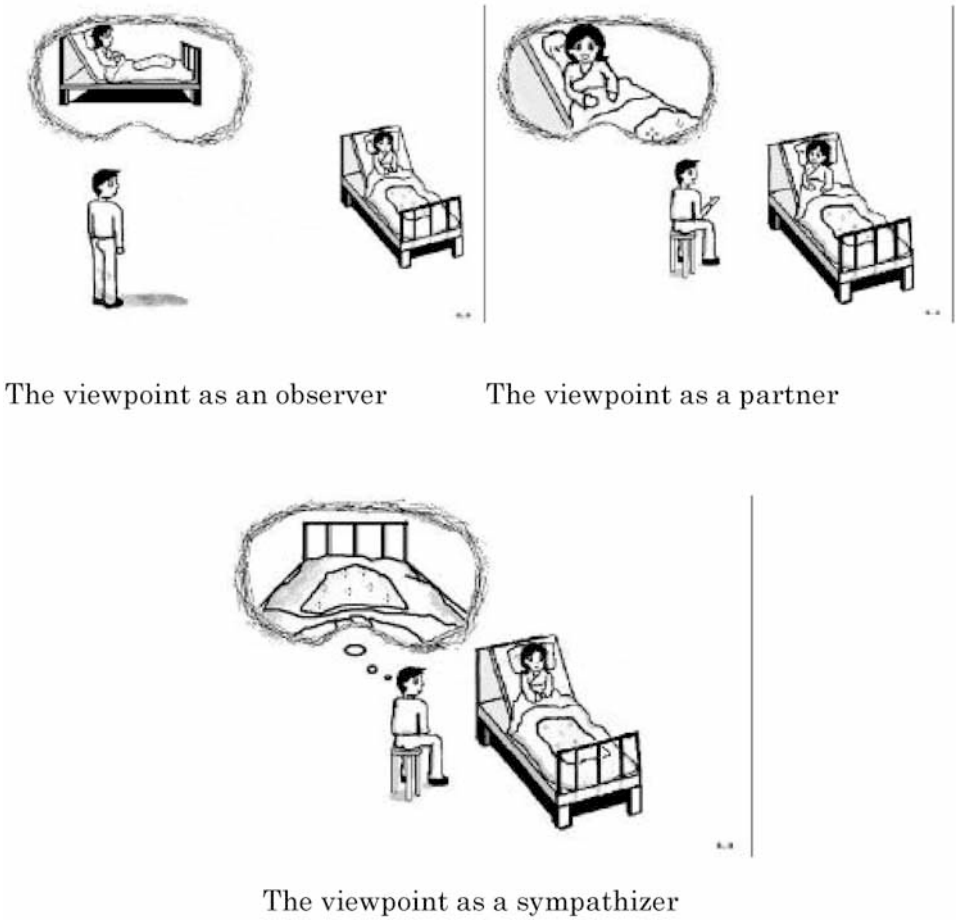
"Support systems" here include the following: the educational support systems for people to acquire correct knowledge of devices and adaptive techniques; the system of financial support for persons with disabilities to acquire necessary devices; the support systems to ensure that persons with disabilities can use these devices safely and without worrying in their daily lives; and information databases that anyone can use at any time to find out what kind of support systems are available.

There is the reality that there are great regional differences in support systems depending on the countries and regions. However, such differences are expected to decrease gradually and steadily, with the spread of correct knowledge about assistive technologies.

There are also changes in the composition of the engineers of assistive technology, due to the appearance of technical volunteers. Technical volunteers are steadily increasing in various regions and playing major roles. But here, also, it is essential to spread the correct knowledge and adaptive techniques. Instead of providing self-complacent assistance or making such decisions, it is essential for these volunteers to provide assistance by fully discussing with fellow volunteers. It is also desirable for them to carry out activities by utilizing the diverse social resources available locally.

3. Conclusion

I believe there are three viewpoints in understanding persons with disabilities. The first viewpoint is that of an observer. It is very important in objectively understanding the overall image of persons with disabilities. The second viewpoint is that of a partner. It is also very important in providing carefully thought-out services in meeting with each person with disabilities. The third viewpoint is that of a sympathizer, in other words that of the person with disability him/herself. Medical personnel will look at patients as targets of medical services. They may rarely see them as people who are leading the same kinds of lives as themselves. An essential task responsible to us is to understand as much as possible the patients' feelings and the world they are looking at.



Three Viewpoints to Look at the Person with Disabilities (illustrated by Ayumi Kurino)

I have hereinabove discussed the main points believed to be important when persons with disabilities use assistive devices.

Technologies are sure to progress in the future, and the environment of persons with disabilities will change greatly. However, what will not change are the desires of persons with disabilities to pursue self-realization and the feelings of those who want to assist them to do so.

I sincerely hope that this keynote address would occasion exchanges among the people of the Asia-Pacific region concerning the utilization of technical aids for persons with disabilities. (The manuscript of the keynote address was originally written by the author in Japanese and translated into English by NISE.)

Country Reports

AUSTRALIA

Dr Martyn Forrest
Chair of the Australian Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) Information Communication Technologies in Schools Taskforce.
Secretary of the Department of Education - Tasmania

ABSTRACT

The Australian country report will provide an overview of the universal provision of primary and secondary education, including the national policy context for the implementation of Information Communication Technologies (ICT) to enhance the educational outcomes for all students. The report will outline the political and regulatory context that has supported the development of a comprehensive approach to the provision of education for students with disabilities and look specifically at the policy behind, and the practical use of, ICT in this context.

Australia is a federation of six states and two territories, each with an elected government in addition to the Australian Government. The Constitution of Australia allocates responsibility for school education to State and Territory governments, all of whom provide and manage government schools as well as supporting non-government schools. Government schools, which cater for 69% of all students, operate under the direct responsibility of the relevant State or Territory Minister, while non-government schools (31%) are established and operate under conditions determined by State or Territory government registration authorities.

Within each State and Territory, ministers, departments, statutory authorities and individual schools (particularly in the case of non-government schools) determine policies and practices in areas including curriculum, course accreditation, student assessment and certification, resource allocation and utilization, teacher employment and professional development.

The Australian Government provides funding to both government and non-government school authorities to support agreed priorities and strategies. Specific funds are allocated to states and territories to support the additional needs of students with disabilities. The overall result is that government schools receive the majority of their government funding from State and Territory governments and less from the Commonwealth, while non-government schools receive the majority of their government funding from the Commonwealth, and less from the relevant State or Territory.

The main legislative protection for people with disabilities in Australia is provided by the Commonwealth Disability Discrimination Act (1992). The provision of this legislation means that direct or indirect discrimination against people with disabilities is illegal. In addition, States and Territories have legislation which addresses discrimination against people on the grounds of their

sex, religion, ethnicity, age and disability. Matters not covered by State legislation are covered by the Federal Act.

The Disability Discrimination Act requires schools, teachers, planners, and policy makers to develop non-discriminatory mainstream educational environments. It means that parents, students and their associates can begin to demand them. The offering of parallel segregated system will not be seen as sufficient.

All schools must, unless they can demonstrate unjustifiable hardship, provide a discrimination-free education to girls and boys who have a disability.

It would be quite difficult for the multi-million dollar State education systems to demonstrate that it would have an unjustifiable hardship to provide education to students who have disabilities if they were obliged to respond to a complaint under the DDA (Hastings, 1995).

The Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) Adelaide Declaration on National Goals for Schooling for the Twenty-First Century (1999) specifically addresses the commitment of the Australian Federal and State and Territory government commitment to equity of access and outcomes for students with disabilities. MCEETYA is currently negotiating Disability Standards for Education under the Disability Discrimination Act (1992). A number of States and Territories have submitted Disability Action Plans to the Human Rights and Equal Opportunities Commission (HREOC).

Test cases under the Disability Discrimination Act are exerting considerable influence on educational provision for students with disabilities. Multi-discipline teams work with parents and students to determine the appropriate educational environment and learning program. States and Territories provide a range of educational options students with disabilities including:

- inclusion of students in the local school;
- integration of students in the local school;
- specialist units in primary and secondary schools; and
- special schools.

Access to a mainstream education for students with disabilities continues to be a prominent issue for the Australian community. The Ministerial Advisory Committee Report Technology for Learning: Students with Disabilities (2000) and the Australian Senate Employment, Workplace Relations and Education Inquiry into the Education of Students with Disabilities (2002) have provided recommendations for deliberation by the Australian and State and Territory governments.

Adoption of ICT is transforming our fundamental understanding of education and how all students learn in a way that is much more significant than any other recent educational reform. States and Territories are harnessing the opportunities provided by the new technologies to increase

the breadth and richness of learning, support the development of higher-order thinking skills, increase motivation, and connect students to the realities of contemporary life.

The effective use of ICT is critical to the development of a comprehensive provision of education that increases access, participation, satisfaction and achievement for Australian students with learning disabilities, medical conditions and behavioural disorders and those living in remote areas. It is fundamental to maximising quality education experiences and outcomes for students with visual, hearing, cognitive, physical and multiple disabilities. Through case studies, the country report will highlight the pedagogical benefits of the use of ICT to support students with low incidence disabilities who receive funding through the Federal Department of Education Science and Training (DEST) Strategic Assistance for Improving Student Outcomes program. The report will also describe how technology is being used to support improved health outcomes for indigenous students.

The provision of ICT hardware and support services for students with low incidence disabilities is generally managed through State and Territory specialist programs, with financial support from peak disability associations, charities, corporate sponsorship and community fundraising.

Assistive devices used by students with visual disability students include:

- text-to-speech converters
- screen readers and talking browsers
- larger monitors (19-inch, 21-inch)
- use of existing settings on computer systems
- screen magnifiers
- optical character recognition programs
- refreshable Braille displays
- Braille embossers
- personal data assistants (Braille display)

Students with a hearing impairment are often provided with headphones and devices that increase the volume of the teacher's voice to their ear (eg, RF Units). Other students have cochlea implants, or hearing aids with volume control. Students with cognitive disabilities are supported by a range of software programs and assistive devices including concept keyboards and intellikeys. Students with physical disabilities use computer systems with add-on assistive technologies tailored to the unique needs of the user. These technologies include:

- switches
- large mice or trackballs
- speech recognition software
- on-screen keyboards in combination with pointing devices

- word prediction software
- keyboard guards
- programmable keyboards or overlays, and compact keyboards.

The provision of computers, software and assistive technologies is not sufficient to maximise the learning opportunities for our students with disabilities. The delivery of quality educational programs requires:

- commitment to equity by principals and school leaders;
- highly skilled teachers, teacher aides, speech pathologists, occupational therapists, physiotherapists and social workers;
- collaborative planning with multi-discipline teams;
- partnerships between the school and family or caregivers;
- quality curriculum and pedagogy;
- negotiated individual educational program;
- access to appropriate technologies and online content;
- school connectivity and infrastructure;
- technical support;
- adequate funding; and
- funding models that focus on meeting the educational needs of students.

Australian States and Territories have made significant progress in implementing policies and programs that address these issues, but much is still to be achieved. The country report will articulate challenges currently facing Australian State and Territory education systems as the demands for ICT to support students studying from home in remote areas, and students with low incidence disabilities, learning disabilities, medical conditions and behavioural problems continue to increase.

The Australian Federal and State and Territory governments are providing significant funding over five years to develop a pool of multi-media learning objects to support learners in the compulsory years of schooling to achieve curriculum outcomes. The building of an exchange to cache the curriculum content and to deploy it to each of the stakeholder education systems is an integral part of the project.

Standards for accessibility and educational soundness are central to ensuring that the curriculum materials are accessible to students with visual, hearing, physical and cognitive disabilities and that the curriculum materials meet the relevant provisions of the Disability Discrimination Act (1992).

The Le@rning Federation is working to ensure that its three areas of output, content

procurement, information systems development, and market information are accessible to and useable by people with disabilities. In particular, the initiative is concerned that the curriculum content meets the needs of students with disabilities, their teachers and education assistants.

To achieve access, The Le@rning Federation has implemented a range of actions and quality assurance processes to ensure that:

- students with a disability can access the learning opportunities of the Initiative's online digital content
- the learning objects to work with students' assistive technologies
- the learning objects are perceivable or intelligible for students with various profiles
- multimedia developers understand the accessibility specification.

The Le@rning Federation Disability Action Plan has been provided to the Human Rights and Equal Opportunity Commission (HREOC) for registration.

A demonstration of the accessibility features of multi-media learning objects developed by The Le@rning Federation will be provided in the country report.

BANGLADESH

Mr. M. Ishaque Bhuiyan
(Joint-Secretary)
Managing Director
National Foundation for Development of the Disabled Persons, Bangladesh.

Educational Support for Children with Disabilities and the Utilization of ICT

Introduction:

Bangladesh is an independent democratic country situated in the Southeast Asian region and surrounded by India, Myanmar and The Bay of Bengal. Bangladesh has a population of about 130 million in an area of 1,47,570 square kilometers with a density of 834 persons per square kilometer. World Health Organization (WHO) estimated that in developing; countries 10% of the populations are affected by some sort of disabilities. It indicates that there are 13 million people with disability living in Bangladesh, 85% of them are living in the rural areas.

Unfortunately the issue of the disabled children in development initiatives still remains neglected and uncovered. But in the past recent years there has been a significant change in the policy array on disability agenda both at the governmental and non-governmental intensity. Government has approved the 'National Policy for the people with disability' in 1995 and an ' Action Plan' for implementation of provisions enunciated in the National Policy. Programs have been taken for people with disabilities in the public sectors. Inspire of limitations like scarcity of resources, lack of professionalism and intervening technology, Bangladesh has attached high priority to the disability agenda. Our efforts are in accordance with the Plan of Action of "Asian and Pacific Decade of Disabled 1993-2002". We also follow the objectives and guidelines of the United Nation resolutions on "Rights of the Disabled"; the proclamation "Full participation and equality of people with disability in the Asia and Pacific Region" has been signed by our Government. In order to give a legal coverage or status to the issues the concerned ministry has enacted a Legal Act-known as "Bangladesh Disability Welfare Act-2001" passed by the National Parliament.

Education is the fundamental right for all people. Every government has the responsibility to provide basic education for all. But developing countries like Bangladesh is facing the problem of insufficient fund flow in the field of education. Especially the marginal people are most badly affected. In recent years, the literacy rate in Bangladesh is trying to increase rapidly towards the goal of eradicating illiteracy fully by the year 2015. Both the government and the non-government

organizations with the internal and external resources have been contributing to the growth of this national literacy rate. However, a most vulnerable section of the population, the people with disabilities has not been brought under this praiseworthy nationwide education program being carried out by the Government and NGOs in the country. In recent days, Information and communication technology (ICT) is so implicated in everyday affairs all over the world, it is regarded as obligatory for people in every affair for the development of livelihoods. In the last ten years, there has been much progress worldwide in ICT development, which has opened up many opportunities for people with disabilities especially in matters of networking, solidarity, employment and independent living. Assistive computer technology and other augmentative communications products make easy access to information and communication for people with, disabilities. These assistive computer technologies can also facilitate access to increased employment opportunities.

Education Situation of People with Disabilities in Bangladesh:

Bangladesh is running educational programmes through two ministries namely the Ministry of Education (MOE) and the Ministry of Primary and Mass Education (MOPME) and some directorates under them. A study conducted in 2002 by Centre for Services and Information on Disability under Directorate of Primary Education titled ESTEEM STUDY I1: Education children in Difficult Circumstances : Children with Disabilities reflect that only 11% of children with disabilities are receiving some sort of education in Bangladesh. Most of these numbers are enrolled in education by parental initiative in the regular educational settings and some are enrolled in the special educational programmes for the disabled run by the Ministry of Social Welfare.

Educational Initiatives of Ministry of Social Welfare for the People with Disabilities:

The divisional office of Social Welfare has residential seats for students of hearing impairment and visual impairment. On the other hand, each district of Bangladesh is running Integrated Education for the Children with Visual Impairment. Each disabled student under this project gets food and other expenses including education and refreshment. Budget Allocation of different development project of Ministry of Social Welfare covers some areas like development and Modernization of Maitree Shilpa for the Physically Handicapped, Training and Rehabilitation Centre for the Social Handicapped Girls etc. The ministry of Social Welfare had taken a number of new initiatives in the year 2001-2002. Among the six (6) new initiatives, four are on persons with disabilities such as Employment Rehabilitation Center for the Physically Handicapped, Bangladesh Disabled Institute, Training Centre for the Orphan and Disabled, Project of the Social, Development and Rehabilitation for the persons with disabilities etc.

The Government of Bangladesh, under the department of Social Services, Ministry of Social Welfare is presently running the following programmes for the persons with disabilities-P. H. T Centre, Schools for the Deaf and Dumb, Schools for the Blind, Integrated Programme for the

Blind, Rural Rehabilitation Centre for the Physically Handicapped (RRC) National Centre for the Special Education (NCSE), Employment Rehabilitation Centre for the Physically Handicapped, Employment center of Training and Rehabilitation for the Blind, Braille Press etc. National Foundation for Development of the Disabled Persons is an autonomous body under the Ministry of Social Welfare, which is established for the overall development of the lifestyle of the people with disabilities in Bangladesh. The Foundation is providing monetary support to NGOs in their programmes related to disability, education and ICT. Moreover, this body is doing the activities like supervision of development efforts in the field of disability, educational and health related project support, legal support etc. According to the Act enacted for the people with disabilities, 64 District Coordination Committees have been formed in 64 districts in Bangladesh. The Foundation is playing an important role to make a harmony among the activities of these committees. National Centre for Special Education (NCSE) under this Foundation is playing a role for the development of human resources in the field of disability. National Foundation is also distributing fund from a special allocation of the Government in the National Budget among the development initiators who are running disability related activities.

Current ICT Infrastructure:

According to the country report of the Secretary of the Ministry of Social Welfare, Government of the People's Republic of Bangladesh presented in the Interregional Seminar and Regional Demonstration Workshop on Accessible Information and Communications Technologies (ICT) for Persons with Disabilities in Philippines held in March 3-7, 2003 the Government of Bangladesh has undertaken a number of steps for ICT infra-structural joining of Bangladesh with fibre-Optic Sub-marine cable network is underway; emphasizing development of telecommunication infrastructure deemed as industrial development to support the growing demands of the ICT sector, both in Public and Private sector; taking steps to amend fiscal policy (Customs Duty and Tax etc.) towards procurement of telecommunication infrastructures as well as cellular telephone handset, encouragement for optimum utilization of MW/UHF towers, Radio Towers, Power Pylons, Cable Duct by the private sector for augmenting information infrastructure ; constructing countrywide National Information Infrastructure (Nil) for the use of all Telecommunication and Internet Service Providers (ISP), co-operation between BTTB with private licensed ICT service providers ensuring the use of existing facilities to be established ; providing dial-up Internet access from local telephone-calls, ISP, ensuring public access to information, cyber kiosks will be set-up in all post offices, union parishad (council) complex and upazila (Sub-district) complexes. Private sector participants will be encouraged to set-up theses facilities.

ICT practices in Bangladesh for the People with Disabilities:

a. National Foundation for Development of the Disabled Persons:

National Foundation for Development of the Disabled Persons has already provided supports to many non-government organizations in their disability related activities to include ICT based

projects as well. National Centre for Special Education (NCSE) situated in the Dhaka city is going to initiate ICT based courses in their HRD activities in near future.

b. ICT Based Assessment and Assistive Devices:

Bangladesh is now providing ICT based Assessment system for identification of diversified types and degrees of disabilities. ICT based assessment system includes audiological assessment, vision test, intelligence testing etc. Selection and setting of assistive devices like hearing aids. Cochlea implant, artificial limbs etc.

c. Augmentative and Alternative Communication Devices:

Bangladesh has developed a standard alternative communication approach that is called Sign Supported Bangla Language. An Interactive CD is also available with the printed documents of the language which includes video clips of the developed signs with their photos and easy to access like a web page. This language is appropriate for the children with hearing-impairment, autism. Children with intellectual disabilities, children with multiple disabilities, children with CP and development of Augmentative Communication.

d. Training of Teachers on utilization of ICT:

Department of Special Education of the Institute of Education and Research (I.E.R.) of the University of Dhaka is providing a four years graduation and one-year master's level programme to develop experts, special educators and teacher trainers. In this long professional curriculum there are two courses on ICT that is developing the products of the department to apply ICT in the development of people with disabilities in Bangladesh. This department has a rich library on education and disability that also disseminates information in this technical field.

e. NGO Practices on ICT:

Centre for Services and Information of Disability (CSID), a non-profit voluntary organization is disseminating information on various issues of disabilities through using-email networks. This project is known as Disability Information Dissemination Network (DID-Net) and there are more than 200 subscribers of this ICT network.

BFES has developed different education models aiming to improve quality of education in Bangladesh. These are based on knowledge assembled through international collaboration and achievements through information dissemination process. To develop and nurture an international network of committed educators, parents, and other dedicated to the development of effective uses of ICT in education, ICT for disadvantaged people of Bangladesh aiming at creating employment opportunity for rural poor.

World Perspective of ICT Application for the people with disabilities:

People with disabilities in the Asia and Pacific region, however, still face multiple barriers

in accessing ICT and the skills and knowledge that are required to benefit from it. The basic problem for many is the absence or the lack of the infrastructure to support ICT development, access and use-electricity, telecommunications, hardware and software. The problem is especially acute in rural areas in the region where a majority of people with disabilities live. Even in industrialized countries, Internet accessibility for people with disabilities is significantly lower than for non-disabled people. The transformation of the Internet from a text-based medium to multimedia environment is also causing problems for people with disabilities. With a text-based medium, people with visual disabilities could use screen readers to access the internet but the predominantly graphical web pages that characterize current Internet traffic poses a barrier.

People with learning, cognitive or hearing disabilities are also experiencing difficulties with assistive computer technology that cannot help them conduct web transactions because the new Internet environment does not accommodate the functionality needs of accessible design. Moreover, people with disabilities still face many obstacles in the job market of an increasing digitalized economy due to lack of the skills and the understanding in ICT applications, reflecting the general low-level educational attainment.

MANILA DECLARA TION ON ACCESSIBLE ICT:

In the Interregional Seminar and Demonstration Workshop on Accessible ICT and Persons with Disabilities, held at Manila from 3 to 7 March 2003, representing the countries of Bangladesh, Brunei Darussalam, Cambodia, Canada, Indonesia, Laos People's Democratic Republic, Myanmar, Pakistan, the Philippines, Thailand, Vietnam, and the United States of America, declared to develop scopes of possibilities to access the virtual world and knowledge-based economies by means of the global Internet and related information and communications technologies remain limited to many people in countries, persons with disabilities in particular.

Suggested Elements of Empowerment Strategies:

ICT training should be initiated at different levels for different target groups to meet the demand of skilled human resources in this field. Trainings should be accessible for people with disabilities. Ministry of Social Welfare and Ministry of Education or MOPME in collaboration with the NGO initiatives working with the people with disabilities, should play the key role in implementing this programme. Educational institutions at different levels of higher studies, both in the public and private sectors, should provide courses to produce ICT graduates of International standard. Special arrangements should be made for the people with disabilities in those institutions.

It should be encouraged by the government to promote computer-aided education at all level. People with disabilities will have to be provided special incentives to have maximum access to these facilities.

Maximum use of telecommunication system and other communication devices should be

ensured by the government to ensure the up growing course of ICT movements.

Internet, talking website and signing facilities should be provided in the country to make the ICT field usable for the people with disabilities. Number of schools for the children with disabilities should be increased and those schools should have computer facilities.

It is important to reform existing national policies of different sectors related to disability issues. It is also necessary to develop rules and required procedural policies in support of inclusion of children with special needs through MOE and MOSW.

Coordination is essential within the ministry, inter-ministries and inter-departments for systematic and coordinated interventions towards promotion of education for children with special needs. School management policy should include issues of education of children with special needs into their existing regulations.

NGOs dealing with the PWDs should be encouraged to establish centers at the village level for providing hard ware/soft ware or other support services. At the same time concerned agencies of the government will use both the formal and non-formal channels to disseminate information about the application, advantages to the PWDs of the use of ICT.

It is necessary to develop a learner-oriented curriculum for better quality learning, especially for the children with special needs. This requires curriculum modification and simplification and development of appropriate teaching materials to make lessons attractive. Screening and assessment of disability is a precondition to provide accurate education and other support services.

Assistive and educational devices help the learning process ; psychosocial development, communication and mobility of children with disabilities, help them to participate in classroom activities independently and efficiently. So, these services should be ensured for better quality education.

Accessibility to any educational set up is one of the major factors for children with disabilities. Besides, other special need services like occupational therapy, speech therapy etc. are required to allow learners with disabilities to get in touch with education.

Referral is required for assessment and management of special needs of people with disabilities. Proper counseling and guidance by school authority can facilitate children with disabilities, families, peers and community people to get access to the services and enable them to get in touch with the inclusion process.

Conclusion

ICT and its wide area of application have explored a new prospect towards expansion of

business like many countries in the Southeast and South Asian region. Bangladesh, as well as other developing countries, may also take the opportunity to eradicate poverty enhancing the income of the people equitably through the optimum exploitation of the potential ICT based education in a very shod time. To accelerate the process of economic development through export of software and data processing, expansion of infra-structural facilities (Establishment of the Connectivity by Fibre Optic Marine Cable Network with International communication backbone), development of human resources on ICT, with special emphasis to people with disabilities, allocation of more resources in the national budgetary provision for development of ICT based education and ICT related activities are essential pre-requisites. As a developing country, Bangladesh should utilize this reward of new era for the development of people with disabilities.

References:

- ESTEEM STUDY Ⅱ: Educating Children in Difficult Circumstances: Children with Disabilities, Centre for Services and Information on Disability in association with Directorate of Primary Education (DPE), PMED, Government of Bangladesh, 2002.
- Ministry of Social Welfare, Introducing Activities, 2002
- Directorate of Social Service, Souvenir on founding the Social Welfare Complex, 1996.
- Hossain M. Munshi; Development of People with Disabilities in Bangladesh: Present Trend and Future Needs, 2001.
- Ahsan M. Traiq and T.W. Rahman; Study on Budget Analysis: Education of Children with disabilities by Action Aid Bangladesh, 2002.

CHINA

Ms. Yunying Chen
Director of Special Education Division,
China National Institute for Education Research

Online Resource Center in Supporting Inclusive Education

In line with the objectives of project on "Promotion of Basic Education for Children with Special Needs" by UNESCO PROAP and China's policy on inclusive education and application of information communication technology in improving teaching and learning quality, a web resource center was designated in application of strengths of information technology in supporting inclusive education. The web resource center for the special needs, China Online for the Special Needs (COSN) at http ://www.specialneeds.org.cn, has build capacities in : promotion of basic education, creation of alternatives for problem solving, providing direct feedback, offering sustainable mechanism, dissemination of information in distance, serving numerous people with no limitation, providing interaction among people and institutes, sharing large amount of information and knowledge, creating opportunity for collaboration, delivery of message and information to individuals directly, and searching of solutions.

This paper presented the recent development in online resource development in supporting school improvement , which include the international initiative and national actions, the rational and needs of the situation in China for such a development, the strengths and outcome of the online resource center, and the current issues and undertaking action for continuing the development.

The Background

Efforts in promoting education for all and including the special need individuals have been documented in several events in the region and in the global actions. They were: Asia-Pacific Program of Education for All (APPEAL, 1987), The World Declaration on Education for All (Jometien, Thailand, 1990), The Asia pacific Decade of Disabled Persons 1993-2002 (Beijing, China, 1992), and World conference on Special needs education: Access and Quality, in which the Salamanca Statement and Framework for Action on Special Needs Education was adopted. (UNESCO, 1994).

These mentioned actions aim to inform countries for restructuring education by the principle of inclusion and by recognition of the need to work towards "school for all." In this educational initiative schools are institutions, which include everybody, celebrate differences, support learning, and respond to individual needs. In this regard we seek innovative mechanism to support school

development in addition to traditional support, i.e. legislation and policymaking, teacher education, curriculum innovation, classroom management, etc. As we looked around, we found Information communication technology is the area which full of potential in helping implementation of inclusive education.

In the late 80's China recognized the delayed development in providing education for the special needs (NSD, 1987). The endeavor to promote education to the special needs launched in 1988. In a review, Chen identified (Chen, 1996) several powerful mechanisms contributing to the achievement of special needs education nowadays. They were making legislation to protect the right of the disabled person, enacting regulations to implement educational programmers, and mandating national policy for inclusion, and etc.

After all that have achieved what would be the next and crucial actions for promotion of the special needs education in China? Baring this concern in mind and in collaboration with UNESCO PROAP, the Chinese delegates attended two workshops aiming in "Promotion of Basic Education for Children with Special Needs" in Bangkok in 1999. As a result of these two workshops China proposed to develop a web site in supporting the special needs education.

Later, it was approved that within the framework of the project "Promotion of Basic Education for Children with Special Needs" the Special education Division of the China National Institute for Educational Research carry out activities to develop the web site.

The activities undertaken were:

1. Organize a meeting of the project team for conceptualization of the resource center.
2. Design a Web-Resource Center.
3. Identify list of resources for inclusive education by giving questionnaires to teachers concerning their needs of teaching and learning
4. Collect resources from national resource centers.

The rationale -Why a Web Site

The needs of China

The national policy made in 1988 mandated that the special needs education is an crucial component of universalization of basic education. In this regard China's education became in favor of providing education to the special needs in the inclusive setting. A statement made to clarify this vision was that the special needs should be "learning in the regular classes" and that "regular schools should be the main body of educational provision for the special needs children". The outcomes of this national policy has lead to:

a. Two third of the special needs children enrolled in schools nowadays receiving education in regular classroom.
b. The special schools has been identified as resource center, and a town with 300 thousand population should set up such a center to support the development of the special needs

education. The number of schools was 1500 more in 1999 and deceased to 1100 in 2002.

c. There are a million of elementary schools in China. Assuming one tenth of schools involved in integration program, the support and management of 100 thousand schools become a critical point for future planning.

d. With assistance from UNICEF, UNESCO, and NGO, government of China implemented inclusive education in every province, region, and city in China ; including the under developing province or region such as Xin Jiang, Qing Hai, and Gui Zhou. In the agenda reaching the unreachable places and in supporting their continuing development become the priority.

All of the mentioned development just achieved in a decade or so, How can China manage such massive numbers of program? How can we continuing support the development for diversity of needs of different region and province? How can we collect information, disseminate materials, sharing resources, and exchange experience. The solution for China was a web resource center.

The Strengths of Web Resource Center

According to UNESCO, Information technology is the scientific, technological and engineering disciplines and the management techniques used in information handling and processing ; their applications ; computers and their interaction with men and machines ; and associated social, economic and cultural matters.

The objectives of the development of online resource center, in brief, were:

a. To develop guidelines for inclusive education practice in the areas of schools development, management of inclusive education, training of education personnel, educational support services, and community support.

b. To synthesize and share practical experience with regard to effective provision of education for children with special needs.

c. To strengthen national capacity to design, plan and implement educational initiatives for children with special needs; and

d. To select, modify and create appropriate training and support materials to enhance capacity and empower key personnel working with children with special needs.

In accordance with these objectives and the needs of China's development. A web resource center was designated utilize strengths of information technology. A web resource center has capacity in:

- Promotion of basic education
- Innovation for problem solving
- Providing direct feedback
- Offering sustainable mechanism
- Dissemination of information in distance
- Serving numerous people with no limitation

- Providing interaction among people and institutes
- Sharing large amount of information and knowledge
- Creating opportunity for collaboration
- Delivery of message and information to individuals directly
- Searching of solutions

Clients of the Center

In conceptualization of the resource center meetings and interviews with schools personnel and specialists in the field were applied to collect idea and information. Concluding from our study, major objectives of the center was to provide information and services to:

- Promote public awareness of needs of children with special needs.
- Government in planning and making policy for the special needs education
- InsIitutions and organization which providing services to the special needs
- Chinese organizations of the special needs in communication with international community
- The specialists for collaboration and on line counseling.
- Parents and family members of children with special needs
- Individuals with special needs in fulfilling their individual needs
- Manufacturers for demonstration of materials and devices in quality education and quality life of the special needs

Content of the Center

China Interaction - Center for the Special Needs (CI-CSN) included 15 components. They are:

-Organization and institution
-Inclusive program
-Resources center
-Sharing of Experience
-Urgency request
-New Books and materials
-Media Center
-Window of the World
-Dr. Chen Office
-The special Needs
-Topic for the month
-Donation of Love
-Exhibition
-News Center
-Membership

Current issues and undertaking Activities

The online resource center requires large amount of data and information input as well as virtual activities each day. We are now carrying out national survey to understand what are needs and expectation of teachers and students from special schools and regular schools. China's government had launched school networking project, which aimed to connect most of the schools

in china by Internet by year 2010. There are infrastructure issues to deal with, and in teaching and learning concerns the special needs the whole nation still lack of a comprehensive collaboration in improving education quality. Competition among schools may have caused

Further isolation in using ICT for teaching and learning purpose. Second issue is personnel training in application of information technology. Even in big city such as Beijing, schoolteachers are not familiar with the skills in applying technology in teaching. Various training programme will be needed to assist teachers, parents, and children with special needs in application of the center's resources. In addition to information sharing there are many interaction functions should be implemented so that the center will be equipped with efficient function for the users. These includes data base development, discussion group, open curriculum, people to people counseling. Our greatest concern is the remote areas in China where have no access to the center's information.

References

UNESCO (1993) Sub-Regional Seminar on Policy, Planning and Organization of Education for Children with Special Needs, Harbin, China, 1-4 February 1993. Final Report Paris: UNESCO.

Yun, X. (1994). China In K. Mazurek and M.A. Winzer (Eds.) Comparative Studies in Special Education. Washington, DC: Gaullaudet University Press.

UNESCO (1999) Planning Meeting to Develop the Project Plan for the Promotion of Basic Education for Children with Special Needs, Bangkok UNESCO PROAP.

James Lynch (1994) Provision for children with Special Needs in the Asia Region, The World Bank, Washington, D.C.

UNESCO (1999) One School for All Children, EFA 2000 Bulletin, http://unesco.uneb.edu/unesco/efa-32/overview.htm.

Yunying Chen (1996) Making Special Education Compulsory and Inclusive in china. Cambridge Journal of Education, Vol.26, No. 1,

INDIA

Dr. Janak Verma
Reader, D.E.G.S.N.,National
Council of Educational Research and Training

COUNTRY REPORT ON POLICIES AND MEASURES INCLUDING FUTURE PLANS FOR UTILIZATION OF ICT IN THE EDUCATION OF CHILDREN WITH DISABILITY

Introduction:

92 Governments and 25 international organizations met in Salamanca, Spain, from 7-10 June 1994 to further, the objectives of Education for All by considering the fundamental policy shifts required to promote the approach of inclusive education, namely ***enabling schools to Serve All Children, particularly those with Special educational needs.***

Education of Children with Special needs cannot be achieved in isolation. It has to be an integral part of general education System.

A number of initiative have been undertaken for the children with disabilities both at the National and International level for the education & empowerment of children with disabilities.

At the National Level the Constitution of India (26 November, 1949) states clearly in the Preamble that ***everyone has the right to equality of education and of opportunity.***

Article 45 of the Constitution lays down that free, compulsory and Universal Primary Education should be provided to all children up to 14 years of age.

In line with its responsibility to develop policy in accordance with the Constitution, ***National Policy on Education*** (NPE) 1986 and its ***Programme of Action*** (1992) stressed the need for integrating children with special needs in general education system.The objective is to integrate them with general communities at all levels as equal partners, to prepare them for normal growth an to enable them to face life with courage and confidence.

The Person with Disabilities Act for equal opportunities, Protection of Rights and Full participation, 1995 (PWD Act, 1995) affirmed the access to free education to every child with disability in an appropriate environment till s/he achieves the age of 18 years. In order to achieve

the target of education for all, Govt. of India sponsored a centrally sponsored scheme of **Integrated Education for Disabled Children** (IEDC) that purports to provide educational opportunities for children with disabilities in common schools, to facilitate their retention in the school system. The children with disabilities, who are placed in special schools initially for preparation would also be, integrated in common schools once they acquire the communication and daily living skills.

One of the major curricular concerns stated in **National Curricular Framework, NCERT, 2000** is providing education for a cohesive society, so that equality of opportunity and access to quality education to various groups including girls, children with special needs and children from disadvantaged groups is ensured (4-5pp).

Keeping all these directives in mind India is moving towards the objective of Education for All by shifting from the goal of integration to the goal of inclusion.

Ordinary schools now include children with different disabilities. Such children can be considered part of the normal range of variations found in a population. It is the obligation of the school to develop instruction that includes these children in the group and makes them equal participants in everyday schoolwork.

Every student is different and instruction must suit the needs of individuals. Teaching methods must be matched to the abilities & needs of each individual student. For this alternative goals and methods should be worked out that provide greater flexibility.

Information and Communication Technology (ICT) opens up great opportunities to improve the quality of life of children with disabilities.

Information and Communication Technology is being placed at the core area. This is more true for disabled children who for some reason or other have difficulty in following the standard curriculum through established mediums.

The technology enables disabled students to become more independent and contribute on a much more equal basis than ever before. This integration facilitates the acceptance of people with disabilities. Their colleagues and coworkers are first hand witnesses to their skills and potential.

ICT offers individuals the ability to compensate for physical or functional limitations, to access knowledge by adapting digital media to the nature of their disabilities, and to enhance their social and economic integration in communities by enlarging the scope of activities available to them. The actions being initiated by UNESCO are expected to contribute to improving the standard of living of over 600 million persons around the world; 2/3 of whom live in developing countries; who have a range of mental and physiological disabilities.

ICT may contribute not only to the development of cognitive learning but to the social interactions within the class, strengthening the group and making teamwork and shared responsibility for assignments a natural element of the school's activities.

It is believed that computerized teaching materials would encourage the teacher to try out alternative means of achieving the objectives of the instructions.

Printed teaching materials are developed for the average students. Special need children often need an adapted version if they are to have access to teaching materials that correspond to their needs. ICT provide new opportunities to develop products permitting many solutions for both physical access to the material and cognitive adaptation of the content.

What does ICT accessibility means:

ICT accessibility consists of building and distributing a hardware or software product whilst ensuring that its content and application are available to the broadest possible audience, irrespective of the fact of whether individuals are using assistive technology or not.

Developments in ICT have changed society as a whole. A host of new products and services have become part of our everyday lives. Though ICT has contributed towards greater independence of children with disabilities, only some of these developments have benefited them.

This has happened not due to the limitations of this technology, it is because the new systems and products have not been designed with the people with disabilities in mind. Therefore, they are often unsuitable for use by these people.

Although there is still a great deal to do in terms of making education accessible to disabled children, there is now increased awareness of the absolute right each student has to learn, and that each child has something to contribute. Hopefully one day the playing field for all children will truly level with the accessibility of ICT to children with disabilities.

Access to teaching materials in a school for all

Computer use in the schools is now in a process of transition. More and more information from both the public and private sectors is now accessible on the internet, and is thus also becoming accessible to children with disabilities who cannot read or process printed material. The printed material is available to VH children in Braille or in the form of talking books. Similarly, children with reading disabilities have the right to printed and other material in the forms that would allow them to take part in instruction on the same terms as other children.

There are many different ways to change the way an electronic device behaves to take account of the varying needs of users. The following describes strategies for addressing the needs of users with a wide variety of abilities and limitations:

If the user cannot see the device, make it say things so that they can use their ears, If the users cannot understand things that are said by the device, let them change the way it says it, If the user has difficulty hearing the device, let them change the way it sounds, If the user cannot hear the sounds from the device, show the sounds visually, If the user cannot be sure of pressing the right button, allow them to Confirm button presses, If the user cannot provide speech input, allow them to use buttons instead, If the user cannot reach or touch the device, let them give commands by speech, If the user wants to use their own customized type of input and output, let them use Remote Control, and If the user cannot use the standard language, let them change the language to the one they can understand.

Touch-pads are one product used primarily by children with disabilities, though they have the potential to become a powerful alternative to the keyboard for early reading and mathematics instruction. In co-operation with the other Nordic countries and Germany and Ireland, working on a touch-pad that may give blind students enhanced information through tactile images. Digitally stored mapping materials that are used to generate city maps are currently being used on a trial basis both to teach blind students how to read maps and as a personal aid for the ongoing acquisition of information on their surroundings.

CIET of NCERT has developed 113 audio programmes of different duration for educable children with mental retardation (mental age 5-8 years) and 25 Programmes "Hindi textbooks : read aloud for children with visual handicap" (Age group 12-14). The textbooks "Indradhanush" and "Gayda Kaumudi" prescribed for higher secondary Schools has been read out for benefit of the children with visual handicap.

CIET has also developed a number of video programmes to promote the education of children with disabilities. It includes awareness programme for teachers, teacher educators, Parents and Community and a number of programmes based on classroom teaching.

Policy with regard to ICT for the education of the disabled in India

NPE (1986) and its Programme of Action (1992) envisages use of Mass Media in Chapter 4 on "Education of the Handicapped." It stated under item No. 13, 4.13.1 that Radio and TV are being used in a limited way both for advocacy as well as educational purposes. The CIET, SIEs, NIHs and other organizations will develop a variety of programmes so that they can be regularly telecast/broadcast. It further stated that the CIET, SIETs and NIHs will also develop software

in non-telecast mode and make it available to DIETs, other training centres and NGOs working with disabled persons.

The policy has ensured that steps will be taken by NIVH, AYJNIHH, NIMH and the NCERT to ensure the availability of Braille slate, and taylor frame etc. to VH children. Similarly language training material for children with speech and hearing impairment would be made available in regional languages.

Acknowledging the potential of modern communication technology the National Policy on Education 1986 and its Programme of Action 1992 had spelt out the actions the need to be taken in this important area in Chapter 9 on "Media and Education Technology".

ELECTRONIC MEDIA

(a) Present Situation

(School Education)

19.2.1In school education, the Central Institute of Educational Technology (CIET) and the six State Institutes of Educational Technology (SIET) in Uttar Pradesh, Bihar, Orissa, Gujarat, Maharashtra and Andhra Pradesh continue to define the production facility.

19.2.2 An important initiative has been the distribution of radio-cum-cassette players and colour TVs in primary schools under the Educational Technology Scheme.

(b) Primary Education and Teacher Training

19.2.4 Recognizing the need to provide necessary background and orientation to primary and upper primary school teachers, inputs in Educational Technology have been made an integral part of in-service as well as pre-service training for teaches in the DIETs. A senior lecturer and lecturer in Educational Technology are part of the prescribed staffing norm for each DIET. These faculty members also serve as nodal points to liaise with the nearest AIR Kendra besides acting as trainers. They help them in production of educational broadcasts. Teacher Training Institutes like DIET, CTE and IASE have been provided with VCRs and colour TVs and efforts are now being made to make available adequate number of software for their optimal utilization.

(c)Higher Education

19.2.5 In higher education the IGNOU has been provided a half hour slot on the national TV network early in the morning. The Country-wide Class Room Programme of the UGC is continuing with a two hour transmission daily between 1-2 p.m. and 4-5 p.m. The UGC has created 15 Educational Media Research Centres (EMRCs) and Audio Visual Research Centres (AVRCs); through these centres the UGC has been able to achieve a level of 80% for indigenously produced programmes.

Radio and TV transmissions have an important role to play in bringing the remote areas within the reach of good quality education.

19.3.4 In-service training of teachers would receive more importance through both T.V. and radio.

(d) Distance education

Distance education in the school sector also got a fillip with the National Open School, which was started in 1989, identifying new vocational areas and providing on-demand examination. It has been very beneficial for the education of children with disabilities because it provided a lot of flexibilities in examination system which is very much required for these children. It has taken up improvements in the content, process and quality of education, particularly environment education, science, mathematics and computer literacy.

Computers in Education

In school sector the use of computer has been initiated by Computer Literacy and Studies in Schools (CLASS) Project. Though the coverage was modest (2598 schools) the CLASS project had led to increasing awareness of computer literacy among students, teachers and parents. However, a close scrutiny of the implementation strategy and achievements of the project shows that the project has not met with the desired degree of success, mainly on account of some short comings in the implementation strategy. In the University sector the UGC is supporting the programme effectively

FUTURE PLAN

The key issues during the Tenth Plan would be a greater focus on improving access and reducing disparities by emphasizing the Common School System in which it is mandatory for schools in a particular area to take students from low-income families in the neighbourhood. The plan will also focus on revision of curricula with emphasis on vocationalisation and employment-oriented courses, expansion and diversification of the open learning system, reorganization of teacher training and greater use of new information and communication technologies, particularly computers. The key theme in the 10th plan would be imparting quality education at all stages of education and the pursuit of excellence.

During 10th plan, Information and Communication (ICT) will include the convergence of centrally sponsored schemes of computer Literacy & studies in Schools (CLASS) and Educational Technology (ET)- which seek to familiarize students with IT. Keeping in view the current demand for IT, a major thrust is to be given to this scheme. State Governments

would prepare Computer Education Plans (CEP) for literacy and education. The components of the merged scheme of ICT in Schools would include (a) funding support for CEPs; (b) strengthening reorientation of the staff of the State institute of Education and Training (SIETs); (C) Digitalization of SIETs' video and audio cassettes in partnerships with NGOs; and (d) web/internet-based education to be managed by the SIETs and (e) production of video and audio cassettes after assessing the demand. The convergence of centrally sponsored schemes will help in imparting science, mathematics and computer education as well as environment and value education in a more focused manner.

INDONESIA

Mr.Mudjito
Director of Special Education,
Directorate-General of Primary and Secondary Education,
Ministry of National Education

Abstract

This Country Report described, in general, the conditions of special education in Indonesia, including the establishment of special schools, the establishment of a formal office that manages and coordinates special education, the efforts that have been undertaken to improve the quality of special education, the efforts that are being implemented, future plans to further improve the quality of special education.

The first special school in Indonesia was the school for children with visual impairment in Bandung, West Java, established in 1901. In 1927 another special school was established, catering for the educational need of children with developmental disabilities (mental retardation). Three years later, in 1930 a special school for children with hearing impairment was also established in Bandung. Later, other special schools for children with special need education were established since the independence of Indonesia in 1945.

Besides the schools under the jurisdiction of the Ministry of National Education, the Office of the Ministry for Social Affairs has some training centers for the training of people with special needs. Vocational skills are also provided at those centers to give them the opportunity to become independent and be able to earn for their living.

In 1965 a section of Special Education was established under the Ministry of Education. Later, in 1975 this section was expanded into a Sub-directorate of Special Education under the Directorate of Primary Education and in 2000 it was further expanded into a Directorate of Special Education under Directorate General of Primary and Secondary Education.

Special education was provided at the primary and secondary education level and is part of the national education system in Indonesia. Students with disabilities can enjoy education at (1) Sekolah Dasar Luar Biasa (SDLB = Special Primary School), (2) Sekolah Luar Biasa (SLB = Special School consisting of kindergarten, primary school, junior secondary school and senior secondary school under one premise), (3) an integrated school, and (4) an inclusive school. An integrated or inclusive school is a regular school in which students with special needs are learning together with children without special needs.

Now there are 39 public special schools and about 1,000 private schools. Private schools are either established and run by foundations or individuals and vary in condition from very good to very poor. There are 49,483 students with varying disabilities in the special schools and many of them come from middle or low-income families. Many children with special needs education do not receive education at a school. The reasons include that (a) they are not accepted at a regular school, (b) there is no special school available in the vicinity, (c) the parents cannot afford to send their children to a special school, or (d) the parents are unaware that there are special schools.

The history of the Directorate of Special Education was introduced. The divisions or Sub-directorates of the Directorate and their subsequent functions were described. The responsibilities of the Directorate included (1) developing policy for special education; (2) planning and programming the development of special education; (3) developing a management system for special education; (4) standardizing curriculum and evaluation system for special education ; (5) developing and standardizing special education facilities ; (6) monitoring and evaluating development programs for special education.

Problems and issues that were discovered from an evaluation included (1) the numbers of special schools are not enough to cater for the needs of children with special needs, (2) the special schools are located in major cities of each district and are not accessible to children living in the rural areas, (3) the quality of education provided by the special schools needs to be improved, (4) many of the existing special schools do not have adequate facilities, and (5) for many of the parents, having a child with disability is an embarrassment and they do not want to send the child to school

The current activities of the Directorate consist of the development of curriculum and books, improvement of facilities, block-grant provision, scholarships for students, the training of teachers, school management training, vocational skills, and education services for drug abused children were described.

In addition, the Directorate is also responsible for the development of education services for children who are gifted and talented. This is part of the fulfillment of the rights of these students. Now the Government is piloting several schools as schools that provides this type of education to those students. The form of the piloted program is acceleration in which students could finish their schooling one year earlier.

Within the spirit of providing “the least restrictive” environment to students with disabilities within a school, the Government is piloting an inclusive education program in several schools in several provinces. In these schools, and depending on the level of severity of disability, students with disabilities learn together with their peers without disabilities within a regular classroom. The benefit for students with disabilities is that they learn to lead their life in a more natural

environment and that it will be easier for them after they graduate. To succeed the program, school managers and teachers of the pilot schools are provided training in the area of inclusive education.

Continuous improvement of special education is carried out with own resources as well as foreign assistance. In the latter context, the Government of Norway provides assistance to the Government of Indonesia in the area of special education. One of the activities under this scheme is the establishment of 7 Braille Resource Centers. These centers are equipped with Braille machines for the printing of Braille books for students with visual impairment in each region. For example, the Center in Jakarta will serve the special schools in four provinces, namely Jakarta, Lampung, West Kalimantan and Central Kalimantan. The teachers of the centers have been trained to use the Braille machines to convert Latin script to Braille, so that students with visual impairment can access knowledge and technology from the Braille books.

Teachers and staff from the Directorate of Special Education were sent to Norway to study at the Oslo University to obtain their Masters' degree in Special Education. They will now be able to contribute to the development of Special Education in Indonesia.

A Skill Training Center is going to be established in Jakarta to provide training for graduates of the Special Schools. The program consists of 6 months basic training in the Center and 6 months on-the-job training in industry. Graduates will be given a certificate of competence when they pass the skill test at the end of the program. This program will help the graduates to find better employment according to the competencies they have mastered.

Within the Directorate of Special Education a Management Information System (MIS) will be established next year. This System will become the main partner of the Directorate's functions of collecting, analyzing, evaluating, and planning of data on special education. Under this System, data on the number of students with special education needs, the types of disability or impairment or difficulty, dispersion of students, a student's age, gender and level of education, the type of support a student needs, the number of teachers, etc. will be collected, analyzed, and evaluated. The result of those processes will become the basis for planning the improvement of special education and the welfare of students with special needs.

Within the establishment of MIS, an information and communication technology (ICT) will be included. Although our intention of formally establishing an ICT in special education development involves electronic tools and machines, our scope of ICT is much broader to include chalkboards, papyrus scrolls, stone tablets, carve drawings, wooden or bamboo tools, etc. (Brown, 1997). We have been implementing this definition of ICT in our schools, to augment a student's strengths and compensate for the effects of disabilities.

Technology is coming to help us in special education, which I specifically will refer to assistive technology. The purpose of assistive technology is "to increase, maintain or improve functional capabilities of individuals with disabilities" (US Department of Education, 2000).

Thus, the emphasis is on creating student-technology partnerships for learning. Today, an audible English-Indonesian and Indonesian-English dictionary is on the market, a product helpful to people with visual impairment. Also, English-Indonesian and Indonesian-English dictionary computer software is in the market. This software is very helpful to people with hearing impairment and other people without hearing impairment. Starting next year, the Directorate will assess a feasibility study on the modification of speech-to-text and text-to-speech computer softwares, which are available in the market in the English language. It is envisaged that these softwares will remove or significantly reduce barrier to learning and participation in life.

JAPAN

Dr.Nakamura Hitoshi
Director, Department of Educational and Information Technology,
The National Institute of Special Education

Country Report on Education for Children with Disabilities and Use of ICT in Japan

I Preface

In the 1980's, small computers far less expensive than the conventional ultra-expensive large computers were developed. This allowed the use of computers at elementary and secondary schools as well as special education schools. The performance of these computers rapidly improved, and their use also rapidly spread. With the progress of the Internet from the mid 1990's, these computers and their spread brought about major changes not only to the field of education but to other diverse areas of the society. This phenomenon is called the IT Revolution. The Japanese government has come to set forth a policy to integrally promote measures designed to let all the people equally enjoy the benefits of the IT Revolution and develop Japan into an IT-based nation that has international competitiveness (the "Basic Plan for the Persons with Disablities" formulated in December 2002 prescribes measures to cope with the IT Revolution as a priority issue, so that all the people can enjoy the benefits of the Revolution both in name and reality).

In the education for children with disabilities, since the time far before the word "IT Revolution" was coined, and from the early stage of the spread of the use of computers in school education, the efficacy of the use of computers had been recognized, and diverse attempts have been made actively. Today, with the advent of the advanced information society, expectations are being placed on the added efficacy of the use of ICT (information and communications technology) including but not limited to computers, for the education of children with disabilities and their independence and social participation.

This Report outlines the ICT-related government policies and the present state in Japan, centering on special education.

II Policies & Measures and Projects related to Use of ICT

1. Japan's IT strategy

The Basic Law on the Formation of an Advanced Information and Telecommunications Network Society (IT Basic Law) was enacted in 2000 and enforced on January 6, 2001. Based on Article 25 of this Law, the IT Strategic Headquarters was established in the Cabinet. It adopted

the “e-Japan Strategy” that aims for the realization of the world's most advanced IT state within five years (i.e., by 2005).

What concretized the e-Japan Strategy was the “e-Japan Priority Policy Program”. This Program points out the following five items as those to take measures on a priority basis for the realization of the IT network society.

ⅰ) Formation of the world's top-level IT networks

ⅱ) Promotion of education and learning and development of human resources.

ⅲ) Promotion of e-commerce

ⅳ) Promotion of administrative digitalization and use of IT in the public sector

ⅴ) Ensuring of the security and reliability of IT networks Among these five items, the Plan sets forth the following three measures for the “Promotion of education and learning and development of human resources”: “Information-orientation of school education”, “Provision of opportunities for IT learning” and ?Fostering of human resources who have specialized knowledge and technology”. Among these, the section below specifically discusses “Information-orientation of school education”.

2. Information-orientation of school education

Based on the e-Japan Priority Policy Program, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has been promoting the following measures with the aim of “developing the environment that all elementary and secondary schools can use computers in classroom lessons by fiscal 2005” : development and installation of computers for educational purposes and their connection with the Internet, enrichment of teacher training, development and extension of educational contents, and enrichment of the functions of the National Information Center for Educational Resources (NICER).

Table 1 shows the present state of installation of computers for educational purposes and Internet connection (at public schools).

Table 1. State of Installation of Computers for Educational Purposes and Internet Connection (as of March 31, 2003, survey by the Ministry of Education, Culture, Sports, Science and Technology)

	No. of schools	Average No. of computers installed	Internet connection ratio (high-speed)
Elementary schools	23,094	24.4	99.4%(52.5%)
Lower secondary schools	10,331	41.6	99.8%(57.8%)
Upper secondary schools	4,118	94.7	99.9%(75.6%)
Special education schools	929	23.2	99.8%(70.1%)

As for teachers, training is provided on diverse levels namely the national government, prefectures and schools, so that almost all teachers can provide lessons using computers by fiscal 2005. Concerning this, the roles are shared as follows. The prefectures foster leaders of intramural training, while the national government fosters prefectural leaders and prepares and distributes teaching aids for intramural training. The National Institute of Special Education (NISE) has also established an "Educational and Information Technology Course", and is providing training of about two month to those recommended by prefectural governments. Table 2 shows the current state of computer literacy of teachers.

Table 2. Current State of Computer Literacy of Teachers (as of March 31, 2003, survey by the Ministry of Education, Culture, Sports, Science and Technology)

	Ratio of teachers who can operate computers	Ratio of teachers who can provide lessons using computers
Elementary schools	88.0%	66.3%
Lower secondary schools	87.1%	46.1%
Upper secondary schools	89.0%	38.1%
Special education schools	82.3%	37.4%

For the teaching aids to be used in the intramural training, etc., the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has entrusted their development to the Japan Association for Promotion of Educational Technology (JAPET). The latter has been producing guidebooks for the use of ICT and preparing and distributing pamphlets for the extension of the same. It is also preparing and distributing training CD-ROMs for teachers (NISE has also participated in this project).

MEXT is entrusting the development of educational contents such as images and animations that can be used in lessons to diverse development teams, and is providing such contents via the Internet.

In addition, at its National Institute for Educational Policy Research (NIER), MEXT has opened a portal site for all kinds of information related to education and learning in Japan.

In the area of curricula, the new curricula based on the National Curriculum Standards for elementary and lower secondary schools issued in October 1998 and those for upper secondary schools and special education schools issued in March 1999 have been implemented, since April 2002 in the case of elementary and lower secondary schools and since April 2003 in the case of upper secondary schools. These curricula are all designed to drastically promote the use of ICT.

3. Efforts in the area of special education

In Japan, the curricula of the special education schools are basically the same as those for the elementary and secondary schools. In addition to such curricula, measures in accordance with the disabilities are taken. For this reason, the measures mentioned in the previous section apply almost as they are to the education of children with disabilities. This section examines those measures from the viewpoint of education for children with disabilities, and also touches on other measures and efforts. In this connection, the final report submitted in 2001 by the MEXT Conference of Research Collaborators entitled "Special Education in the 21st Century: Provision of Special Support to Meet the Needs of Each Child" states the basic ideas concerning special education in the future. It points out the importance of compensating for the disabilities by the use of the state-of-the-art IT equipment and information networks and of utilizing such equipment, etc., as auxiliary means of upporting learning, thereby helping children with disabilities lessen or overcome the diverse difficulties they face due to the disabilities, expanding their communication with the society, and promoting their independence and social participation.

Table 1 has shown the state of installation of computers for educational purposes and the Internet connection at special education schools. The average number of computers installed per school of 23.2 sets may seem small. However, the number of students per computer at these schools is 4.0. The figures for the elementary, lower secondary and upper secondary schools are 12.6, 8.4 and 7.4, respectively, so that it can be said that more pupils have access to computers in the special education schools. Their Internet connection ratios are more or less the same as the case of elementary and lower secondary schools.

The computer literacy of the teachers of the special education schools is slightly lower than that of the teachers of the ordinary schools. Teacher training to improve the literacy is being provided on various levels. On the national level, the National Center for Teachers' Development (an independent administrative institution) is providing training. As mentioned, NISE has established a training course. On the prefectural level, Special Education Centers and others are providing training on information education. Some prefectures have established "Prefectural Information Education Centers" that specialize in information education. On the school level, schools are providing intramural training. NISE personnel are sometimes invited as lecturers for the prefectural training and intramural training.

As for the development of educational contents, through commissioning by MEXT, NISE developed web contents for the education of children with disabilities (2001 and 2002).

At NISE, the research divisions in charge of the respective types of education for children with disabilities are making efforts with digitalization of special education by type of disability. NISE has also established an information education research division to develop ICT, conduct researches on its utilization technologies, as well as researches for the improvement of the ICT literacy. As for the NISE activities related to this time's Seminar theme, several examples have been pointed out. Additionally, in recent years, it has conducted the following activities.

- Upon request by MEXT, NISE has prepared a "Guidebook on IT Equipment for Children with Disabilities" and distributed it to special education schools and boards of education nationwide. Moreover, it has opened an exhibition room of assistive technology called "iLibrary" in the Institute. It exhibits IT equipment in meeting with the type of disability including the equipment printed in the Guidebook. This exhibition room is used for such purposes as leader training.
- Jointly with Japan Foundation of Special Education, NISE has been holding a "Special Education Software Contest" to promote the development of software to be used in special education schools. Prize-winning works are presented on the NISE home page.
- "Schools for the Blind Braille Information Network" had been operated as a braille information distribution service for the pupils of the schools for the blind. NISE has reorganized it into "the NISE Information Netwrok for the Education for People with Visual Impairements", and restarted it as an information network for the education of the visually impaired in general in fiscal 2003.

Elsewhere, the following efforts have been made in the area of education for children with disabilities.

- The Center for Educational Computing (CEC) implemented "100-school Networking Project" for four years from 1995. In this Project, equipment were introduced in 100 elementary and secondary schools and special education schools nationwide, and examination was conducted on the efficacy and possibilities of the use of the Internet. Eight special education schools participated in this project. This project has developed into "E-square Advance Project" and is still being implemented.
- In the "School Internet" project implemented through collaboration by MEXT and the Ministry of Public Management, Home Affairs, Posts and Telecommunications (entrusted to the Telecommunications Advancement Organization of Japan (TAO)), activities such as joint study using the Internet and the TV conference system and inter-school exchange through the Internet have been carried out. 86 special education schools are participating in this project.
- The Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) has been conducting an experiment on web accessibility. It is distributing the "Webhelper" software to check the accessibility of Japanese language web pages.
- In July 2000, the Ministry of Economy, Trade and Industry (METI) issued "Description of Accessibility Guidelines for use of computers by the people with disabilities and elderly".
- Since 1996, the "ATAC Conference" (Conference on Assistive Technology and Augmentative Communication) has been held every year for the purpose of extending the "Electronic and Information Technology Based Assistive Technology" ("e-AT") and the "Assistive Technology & Alternative Communication" ("ATAC") to help persons with disabilities or elderly persons lead an independent life. This Conference is participated by teachers, welfare-related persons, equipment developers, etc.
- The e-AT Association has been implementing a test to approve Assistive Technology

coordinators. In 2003, an "e-AT Seminar 2003" to learn the technology to support the daily life of persons with disabilities is scheduled to be held.

III Measures and Efforts by Seminar Topic

1. Development of ICT to overcome difficulties due to disabilities

In the education for the visually impaired children, in addition to the conventional braille equipment, the use of speech synthesis software has been progressing.

In the education for the physically children with disabilities, the use of input devices in accordance with the type and degree of disability has been progressing. The use of alternative communication methods such as symbol communication is being carried out. In the education for the children with physical/motor disabilities who also have severe (and profound) mental retardation, the use of switch toys is progressing. For this reason, classes on simple methods to fix electric-powered toys covering teachers and guardians are being held in various parts of the country.

In the education for the children with mental retardation, communication boards are being prepared based on Picture Symbols recommended by the Japan Industrial Standards (JIS) for the mentally retarded to facilitate ommunication.

Hearing impaired children are using the email functions of the cell phones which have rapidly spread in recent years as a means of communication while moving.

2. R & D on IT support equipment

The government agencies are subsidizing the R & D on diverse support equipment that use the state-of-the-art information technology. Companies and research organizations are collaborating and participating in such R & D efforts.

3. R & D on educational software

The educational software is being developed by prefectures, schools, research organization, etc. As mentioned, jointly with Japan Foundation of Special Education, NISE has been holding the Special Education Software Contest to promote the development of software for use at special education schools. Prize-winning works are presented on the NISE home page. The prize-winning works before the spread of the Internet have been redeveloped into web contents and made public and available for use.

4. Cases of use of ICT in the education for children with disabilities

Each special education school is conducting practical researches on the use of ICT by children with disabilities. There are also prefectures and municipalities where boards of education or Special Education Centers are implementing promotion projects.

5. Training of teachers for the use of ICT

As mentioned in the previous section, teacher training is provided on diverse levels from national to school.

6. Remote education using ICT

In addition to the "Information Network for the Education of Visually Impaired" project mentioned in the previous section, in 2003, NISE has started to distribute lecture contents via the Internet for the training of teachers engaged in special education. This is a system where the contents of the lectures given at NISE are distributed to prefectural Special Education Centers for use in their training courses.

IV Summary

This report has explained the on-going reform of the special education in Japan, Japan's ICT utilization measures represented by the e-Japan Strategy, measures to promote information-orientation of school education, and policies, measures and projects related to the use of ICT in the education for children with disabilities. It has also presented activities that are actually carried out. I should be happy if this report should be of use in promoting "Education for Children with Disabilities and Use of ICT" in the Asia-Pacific region.

MALAYSIA

Mr. Kamaruzaman b. Mahayiddin
Assistant Director,
Information and Communication Technology
and SMART School for Special Education Unit
Special Education Department Ministry of Education Malaysia

Title
Using ICT in Teaching and Learning for Students with Disabilities: The CRFP Approach in the Design of Smart School Programs for Hearing and Visually Impaired Students in Malaysia

Abstract

Beginning 2003, the Ministry of Education, Malaysia piloted two special schools in using the ICT in learning. Design and procurement of equipments were carried out through Concept Request for Proposal by private firms. Infrastructures were provided for one primary special school for the hearing impaired and one primary special school for the visually impaired. The infrastructures installed were for purposes of school administration and academic management.

An early survey on the use of ICT equipments in the teaching of the Malay Language carried out in the primary special school for the visually impaired found that teachers need to be allotted more time and need to frequently use these equipments for change process to be effective. Other lessons learnt from the pilot project include the need for systematic program planning and standardization of project management.

Introduction

Smart schools in Malaysia were initiated in 1999 as a pilot project. Underpinning the smart school initiative were the Smart Schools in Malaysia: A Quantum Leap and The Malaysian Smart School : A Conceptual Blueprint (1997) documents that targeted information technology skills among future work force to increase national productivity. This is best achieved, from Malaysia's viewpoint, by converting the nation's industrial economy to becoming a leader in the Information Age.

By the end of year 2002, 87 schools were involved in the pilot project. Many other schools, out of their own initiative, though not selected for the pilot project, raised funds and set their own smart schools based on the government model. Special schools, however, due to the different

equipment and program needs, were treated separately in the initiative. The main difference compared to smart school programs for normal students relate to matching technology solutions to special needs. Two schools were selected for the pilot program. The two schools involved were primary special schools for the hearing impaired and for the visually impaired.

Malaysian Smart School Defined

The Malaysian Smart School (MSS) is a learning institution redesigned systematically in terms of learning and teaching and school management to help students face the challenges of the Information Age. The MSS has several objectives, namely:

- to develop students' physical, emotional, spiritual and intellectual faculties,
- to produce thinking and technologically literate work force,
- democratization of education through provision of technological access for every students,
- to create opportunities according to strength and abilities of individuals,
- to increase participation of stakeholders

As for the requirement of special students, the above objectives were detailed further so that objectives were modified to suit their needs. Three additional objectives were included. They were to

- provide students with special needs access to ICT,
- minimize learning barriers, and
- provide support in students learning through a managed learning environment

Methods

Procurement for the special education smart school project was initiated by calling for Concept Request for Proposal (CRFP) documents in line with the mainstream procedure for installation of smart schools. Proposals from private IT firms consisting underlying learning principles, learning needs and solutions, classroom and computer lab designs, hardware and software specifications, training programs and systems integration make up the CRFP. Based on the CRFP, the following components have been/ are under implementation:

- ***Teaching and Learning Hardware and Software***

Hardware

The main premises installed with computer hardwares and networking were the school administration building, computer labs, classrooms, libraries, and specialists rooms (speech therapist and audiologist).

Software

Several special softwares were purchased. Softwares developed by the Educational Technology Division and Curriculum Development Centre used by normal students were also introduced and used by these schools. The Special Education Department has produced its own version

of Sign Language Dictionary cd and is expected to produce a Braille Dictionary cd and on-line learning materials for Mathematics, Science and English by the end of this year.

- Student Development Database

  The Ministry of Education (MOE) in collaboration with the Ministry of Health and Ministry of Social Welfare is developing a database system that tracks special students record from birth to employment. Currently, MOE is developing special students' development database by developing an on-line individual education plan (IEP) software that tracks students academic and support services records. With this application, the Ministry will be able to recognize issues and design suitable programs.

- Training

  Teachers in both the pilot schools are being trained on how to manage the network and how to develop teaching and learning materials using ICT. The Ministry is currently designing courses on the use of digital equipments which include designing materials in DVD, audio (e.g. broadcasting), video editing etc.

Discussion

An early survey on the use of ICT equipment in teaching the Malay Language in the primary special school for the blind found that about 60% of the teachers teaching in the blind primary pilot school use special software (JAWS) and hardware (Braille and Speak) to teach blind students basic computer skills. The study also found that despite being introduced for a number of years, teachers were still reluctant to use technology (CCTV) to teach students with low vision the learning skills. Further studies need to be carried out to identify strengths and weaknesses of the program. Despite the limited study done several issues were identified.

- Change Management

  Change Management is crucial to the success of the program. Even though teachers have been trained to use special hardwares and softwares, time should be given for teachers to get accustomed to these technologies. The frequencies and allotted time of usage will influence teachers perception and attitude towards ICT.

- Business Process Reengineering

  Areas that need to be improved in terms of work processes include

  ○ Systematic program design and management

  ○ Standardized project management procedures. The Department is currently incorporating PRINCE 2 project management procedures in dealing with software development and project procurement processes.

Conclusion

The CRFP method of procurement has given departmental officers insights of the principles of ICT program design. However, the important element of this project is effectiveness of project management in terms of procurement and implementation. The CRFP method is a top-down approach which requires the government personnel responsible for these matters to be competent and aware of program needs. Alternatives need to be found where the bottom-up approach, that is from the implementers to the planners, can effectively be generated in determining requirements of users in the CRFP.

NEPAL

Mr. Diwakar Awasthi
Deputy Director (Section Chief)
Special Education Section Department of Education
Sanothimi Bhaktapur, Nepal.

Country Report
On
Utilization of ICT and Educational Support for Children with Disabilities in Nepal

Background

The Himalayan kingdom of Nepal is located between China to the north and India to south, east and west. Nepal spreads from the top of the world, Mount Everest with 8848 meters to the Gangetic planes with less than 200 meters from the sea level covering a total area of 1,47,181 square kilometers. Nepal is divided into five development regions and 75 districts. The districts are further divided into smaller units such as Village Development Committees (VDCs) and municipalities. Currently there are 3915 VDCs and 58 municipalities. The total population of the country is 23.2 million with the growth rate of 2.3% per annum.

Nepal is a country with immense diversity. There are more 100 ethnic and caste groups. Nepal's biodiversity presents a unique case in the world. Nepal is well known for its natural resources and human heritage. However, Nepal is striving for its infrastructure development and social transformation. Over some years Nepal is facing insurgency situation in the country. Intensive efforts are being made to build peace and promote harmony among the people.

After the restoration of democracy in 1990, Nepal has made a significant progress towards increasing children's access to basic and primary education. However, 19 per cent of children are still out of the primary school system. A significant portion of such a hard-to-reach population consists of the children with disabilities. In order to ensure educational services to the special needs children, the role of Information and Communication Technology (ICT) is crucial. ICT based education can prove instrumental to cater to the needs of these children and ensure their reach in education with a view to attaining the Millennium Goals of education and providing quality Education For All by 2015.

In order to respond to national and international commitments to Education For All, His Majesty's Government of Nepal (HMG/N) has prepared a National Plan of Action in the light of the Dakar Framework. Based on this, the Ministry of Education and Sports has developed a core

document for EFA 2004-2009 implementation with special focus on the special needs education. Nepal's 10th Plan has placed emphasis on providing education to all disadvantaged and marginalized population in the country. However, ICT has not yet been fully recognized as a key intervention for the expansion and consolidation of special needs education in the country.

Present Scenario of Disability in Nepal

Data on disability in Nepal:

The 1971 census of Nepal estimated 1.5 percent of the total population over 10 years of age having disabilities. The disability sample survey 1980 reported a prevalence of about 3% disability among the total population while population census of 1981 stated only about . 5% disability among the total population. The household survey conducted in eight districts of Nepal by the Special Education Unit of the Ministry of Education in 1995 reported about 4.55% disability in those districts.

The situation analysis of disability in Nepal (2001) reported 1.63% as the national prevalence rate of disability, which comes to be the total of 371442 people with disability in the country. The findings of the latest population census of 2001 are in question about representing the true picture of disabled persons in the country. The different surveys and censuses show different figures and rates of disabilities that may be due to lack of standard definition of disability and scientific criteria.

Policies on ICT:

ICT policies are becoming visible in the National Planning Commission (NPC) documents. The statement below, for example, shows importance of ICT based technologies in Nepal:

- A policy document of the National Planning Commission states that Nepal will establish a center for information and research regarding disability in the country, and an information system will be developed so as to maximize the access to information.

The policy statement recognizes the role of ICT to expand special needs programmes to reach the people with disabilities. However, the policy has not been implemented yet. Also, the Ministry of Education and Sports has yet to develop a sectoral policy on ICT based technologies in order to address the disability issues in the country. Although the Government Policies on Information Technology 2000 are in place, they do not seem to address the issue related ICD based technologies in the interest of the disabled children. Nonetheless, it is a welcome step towards formulating policies and developing national strategies for the promotion Information Technology in the country. HMG/N has taken initiatives towards introducing ICT based technologies in the country.

ICT for Development Project:

This project has been launched jointly by UNDP and HMG/N. The project is being implemented by the Ministry of Science and Technology. The project aims at establishing 15 tele centers in nine district of Nepal.

The tele centers will provide e-mail and Internet facilities to the general public. These facilities will be free of cost. The project does not specify whether the disabled persons will have access to these facilities. Yet, it mentions that the wave camera placed in the tele centers will benefit the disabled persons by diagnosing the illness of the disabled in the center. This project has been implemented from August 2002 on a pilot basis. The project will be in effect until July 2004. And, for the sustainability of the ICT inputs, HMG/N will merge project activities in Government's regular programmes.

Moreover, the Ministry of Information and Communication has placed emphasis on developing hardware, and the Ministry of Science and Technology has given importance to the software side of the ICT programmes. But there is lack of coordination between these two Ministries.

Programmes targeted to the disabled:

The programmes regarding information and communication for disabled persons are as follows:

S.No	programmes	Agencies involved	Target group
1.	Voice of the disabled (monthly magazine) and radio programme	Nepal disabled human rights center	Disabled persons
2	Disabled Manch (Disabled forum)	Annapurna (Mountain) FM, Pokhara	Disabled persons
3	Dristi Chetana (Vision aeareness)	Himchuli (Himalyan) FM, Pokhara	Disabled persons
4	Samanata ka swar haru (Voices of equality)	Radio Sagarmatha (Radio Everest)	Disabled persons
5	Apang Manch (Disabled forum)	Radio HBC	Disabled persons
6	Hatemalo radio karyakram (Holding hands radio programme)	KATH97.9 FM	Disabled and other people
7	Sahas (Courage)	Metro FM	Disabled and other people
8	Braille news	Nepal Television	Disabled persons
9	Computer training	Apanga sahayata kosh (Disabled support fund)	
10	Computer training and secretarial services for disabled women	Ministry of Women, Children and Social Welfare	Disabled women
11	Publications	News published national newspapers	

In order to promote and develop the programme for ICT based technologies, the National Planning Commission has formed a committee for the preparation of the World Summit for Information Society to be held in Geneva in December, 2003. It is hoped that the summit will certainly provide guidelines for the development ICT in Nepal.

Difficulties in the field of disability

Policy level:

The national policy on ICT has not been fully functional yet. However, the National Planning Commission has prepared a draft on ICT policies. The Ministry of Science and Technology has developed general policies for Information Technology in the country. However, these policies are not meant for the disabled persons in the country.

Planning level:

The role of the disabled persons as stakeholders is still very limited in the planning processes. Likewise, there is inadequacy of reliable and valid data for ICT planning for the disabled.

Miscellaneous:

Besides, the disabled persons face problems in receiving ICT services in the country due to the following:

- Inadequate and limited transportation services in the remote areas
- Inadequate media and telecommunication services except for Radio Nepal in the remote locations.
- Lack of electricity in the remote areas
- No access to computer facility in rural areas and distance locations.
- Inadequate resources to promote and develop ICT programmes.
- ICT is still a low priority in terms of resource allocation.

The role of ICT in the field of disability in Nepal

The role of ICT in Nepal is extremely crucial to widen educational opportunities for the disabled and ensure their equitable access to quality education. Below is a brief account on ICT in the country.

Utilization of ICT to overcome difficulties due to disability:

The ICT can prove instrumental to overcome the difficulties faced by the disabled persons in Nepal. Modern technologies can be utilized to address the problems to diagnose the disabilities and cater to educational needs of the disabled persons through formal and non-formal channels of education. Technologies can be used for children with mild and/ or severe disabilities. Efforts are being made to facilitate children's learning through various means.

Nepal has introduced the "judge for windows" programme for the blind. This programme has been developed with the help of Nepal Engineering College and has been effective for the disabled persons. The utilization of ICT can help overcome the difficulties by:

- Increasing the disabled persons' access to information and communication
- Raising people's awareness about the use and effectiveness of ICT in the delivery of education.
- Improving the quality of educational inputs and services.

However, ICT facilities are limited to urban areas of Nepal. Remote and mountainous areas are still deprived of ICT services. Therefore ICT facilities need to be expanded to rural areas of Nepal.

Research and Development of ICT- based assistive technologies:

The Government has not made much effort to carry out research in ICT for the disabled. However, private sector has shown visible presence in ICT services because of Government's liberal policies.

The research and development activities shown below illustrate ICT endeavour in the country:

- Introduction of computer education in school and college curricula.
- Offering ICT at educational institutes and training programmes.
- ICT has been recognized as a component in Education For All programmes and secondary education support schemes.
- Rapid expansion of computer training centres and cyber cafes.
- Initiatives taken to formulate ICT policy.

Alternative Communication devices:

The means of communication mentioned below have contributed to enhancing the role of ICT for the disabled population in Nepal:

- Publication of newspapers representing the disabled community in the country
- Radio broadcast both in government and private sectors through medium wave and FM services
- TV programmes for disabled persons
- Monthly journals for disabled persons.

Teacher training and ICT:

Teacher training programmes for primary or secondary school teachers conducted by the Ministry of Education and Sports do not include ICT elements. Training manuals do not incorporate ICT inputs. The ICT component has yet been endorsed in the training programme.

Distance Education and ICT:

The Distance Education programme does not incorporate ICT elements for the disabled population. The ICT component has not yet been an integral part of the programme yet.

Conclusion

Nepal has been experiencing difficulties in introducing ICT programme for the disabled persons in the education sector. ICT so far has not been an integral part of school education and teacher training institutes. However, in recent years initiatives have been taken towards formulating policies on ICT expansion. Yet, the services need to be focused on the special needs and disabled population.

Unless disabled persons' educational needs are addressed through ICT interventions, Education For All is likely to remain a distant dream. For disabled children's equitable access to quality education ICT can prove instrumental. Therefore, ICT needs to receive priority in government programmes and should be endorsed in policy documents. Schools and teacher training institutions should have access to and willingness for ICT inputs.

In order to translate the ICT visions into reality, there is a need for building partnerships both at national and international levels between government and private sectors. Transfer of technology, however, should not limit to the urban and well-off areas of a country, benefits of ICT should reach the poor and should be aimed at facilitating teaching learning processes of the disabled population. In order to ensure disable persons' access to ICT interventions, the technologies should be affordable and appropriate to suit the local needs. To make this happen, there is a need for willingness and commitments at local, national and international levels. To make ICT a reality for the disabled persons in the countries like Nepal, it is important to combine global perspectives with local solutions.

NEW ZEALAND

Ms. Cindy Diane Stewart
Occupational Therapist / Technology Coordinator Special Education,
Ministry of Education, Whangarei

Examples of the utilization of assistive technology in the education of children with disabilities

Finding the BEST FIT

Introduction:

In New Zealand there is a national Ministry of Education Assistive Equipment Policy and process. As it is specific to education it focuses on assisting students overcome barriers to learning or to accessing the school environment. It is based on the needs of the student, rather than on categories of equipment or cost. (Other technology essential for all of life remains the responsibility of the Ministry of Health.)

A student must fit into one of the Ministry's "Special Education 2000" initiatives to qualify for assessment and provision of Assistive Equipment:

☆ Ongoing and Reviewable Resourcing schemes (ORRS)
☆ Speech-Language (Communication) Initiatives
☆ Severe Behaviour Initiatives
☆ Special Education Grant
☆ Resource Teachers: Learning and Behaviour (RTLB)
☆ National provision for students with sensory impairments and physical disabilities
☆ School High Health Needs

Equipment applied for is then clustered into five categories:

- Hearing Access
- Personal Care
- Physical Access
- Written communication
- Vision

The focus of this presentation is how we, as a team, are addressing the specific needs of students within the area of written communication.

Our Journey into finding the Best Fit

As a Special Education team in the far north of New Zealand, technology is not a direct strength or specialist skill. Historically we depended on specialist communication consultants to fill this need around service provision to students. We decided to develop a Technology Team which consisted of a Speech-Language Therapist, an Occupational Therapist, a Physiotherapist, an Advisor on Deaf Children and one of our managers who had previously been a teacher. I was asked to be the Technology Coordinator as well as being the Occupational Therapist. The aim of the team is to process technology referrals and decide whether we can address the needs of the students within our framework or co-work alongside consultants. A second aim is to develop and expand our skills to take on more of the assessment and provision of technology over time.

The following three case studies reflect our growing knowledge and skills, as well as confidence in finding what works best for the students to whom we provide services. We will always work alongside and learn from communication consultants, even in an advisory capacity. Our skills and competencies are growing, but what I would not like to lose is the way we 'discover' the 'best fit' for the students we work with. That is, to identify the NEED, and hence make technology ' fit the student' rather than the student fit the current technology.

The students:

☆ Michael
☆ Mathew
☆ Serena

A description of each student:

Michael: Michael is 10 years old, has a quick sense of humour, loves learning and has acute hearing. He loves going out fishing with his Dad and has to participate in all the family chores. He always needs to know what is going on in terms of his education and input from others. He has spastic athetoid cerebral palsy affecting all limbs and voice output. He is in a manual wheelchair and another person pushes him where he needs to go. Over the years his head has been identified as his best point of body control.

Mathew: Mathew is 9 years old and in primary school. He loves playing soccer and golf, and is a great student who is very motivated and keen. He participates in all activities in school and is willing to try out adventurous activities, including rock climbing. He has athetoid cerebral palsy which makes all movements strenuous and it is difficult for Mathew to be exact with his muscle control.

Serena: Serena is a 13 year old who has just started high school and intends to go to University. She is a keen student who fights hard for her independence and is resistant to being treated differently to her peers. She has SLE (Systemic Lupus Erythematous), with Polyarticulararthritis.

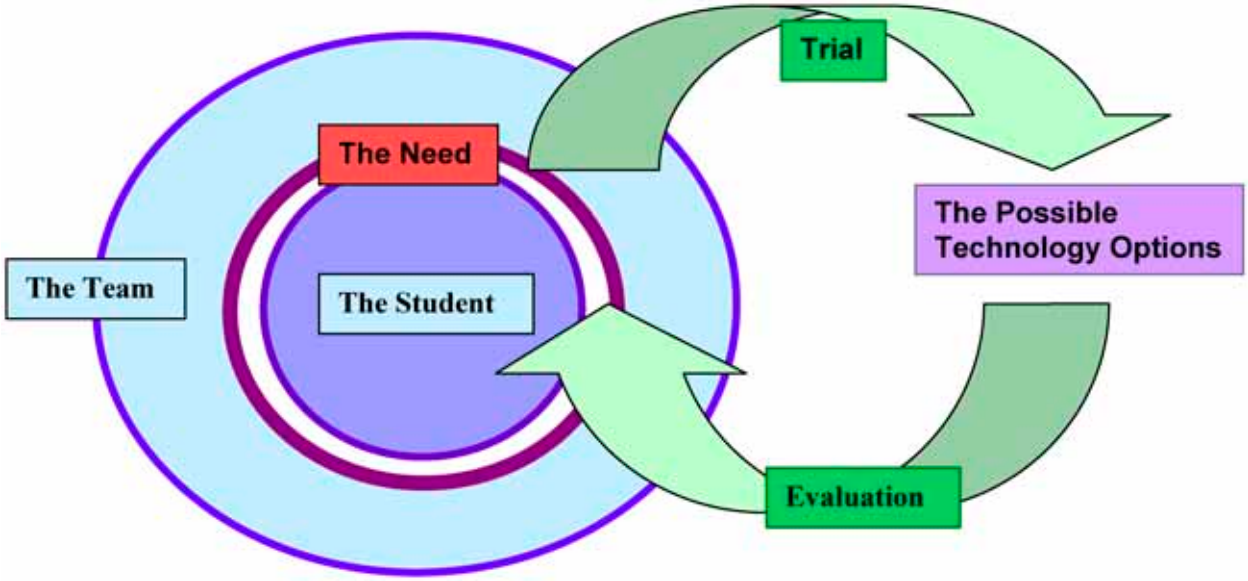
This primarily affects her joint mobility and strength and flares up over the colder months. Over time, it has reduced her hand strength and range of movement significantly.

Finding the 'best fit' seems to be a combination of:

- being certain of the learning goals
- the skills of the student
- clearly identifying the barriers to their learning
- teaming
- appropriate technology

	Michael	Mathew	Serena
The Goal	• To independently write his own stories	• To produce legible writing for both himself and others to read. • To work alongside his peers in group seating arrangements.	• To write even when unwell. • To carry own writing gear between classes. • To work alongside her peers.
The Skills	• Willingness to work and experiment with technology. • Some head control. • Has good knowledge of sight words. • Able to self evaluate.	• Good knowledge of language and early literacy skills. • Can write by hand. • Able to self evaluate.	• Competent writer • Has ability to self monitor her condition. • Able to self evaluate. • Basic keyboarding skills.
The "Barriers"	• No functional control of other body parts. • Insufficient independent head control for long term and sustained output. • Difficulty knowing educational levels.	• Writing is very strenuous and time consuming. • Mathew's athetoid movements cause writing to be large, irregular and difficult to re-read. Any hand movements are very difficult to control.	• Pain and reduced strength and mobility in her joints, especially over winter. She is then unable to write. • Minimal body strength so unable to carry a heavy school bag.
The Team	• Michael • Aaron, Teacher Aide and brother • Celeste, Mum • Specialist Teacher • Special Education Advisor • OT/Technology Coordinator • Communication consultants • SLT • PT • Wheelchair Therapist	• Mathew • Cheryl, Mum • Shane, Dad • Claire, Specialist teacher • PT • OT/Technology Coordinator • Communication consultant: OT	• Serena • Richard, Dad • Specialist Teacher, Intermediate and High School • Teacher Aides • Special Education Advisor • PT • OT/Technology Coordinator
The Technology	?	?	?

It was the dynamic mix of the team around the student, the student's specific needs and the technology alternatives considered that led us to different solutions for each student. At times, as a team, we did not know of certain options in technology, but we attempted to identify what was **needed** first. Therefore, we fitted the technology to the needs of the student and not the other way around.



Being Sure of the Goal:

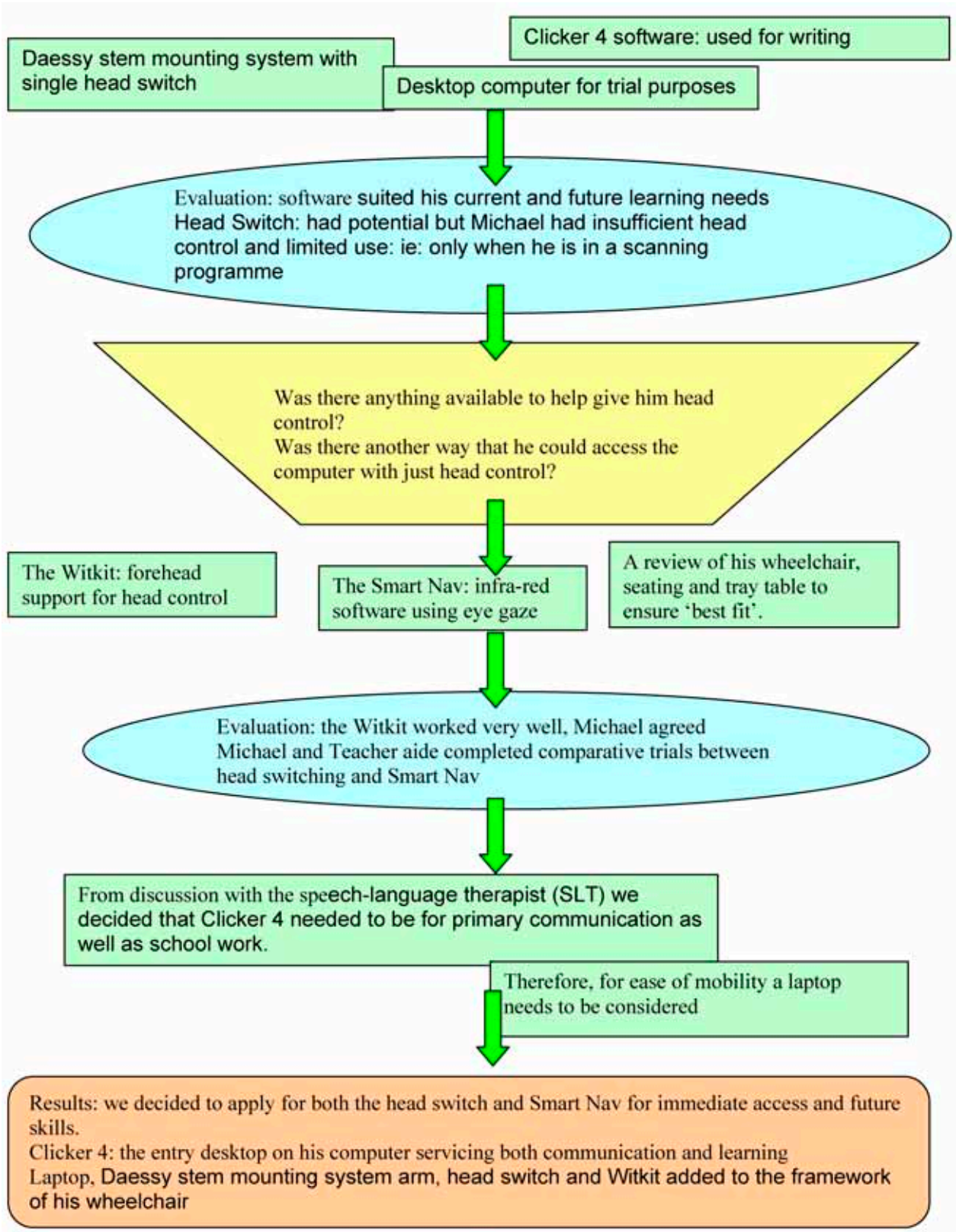
Michael:

To date, Michael has depended on others for all writing tasks. This has meant that he attempts to communicate verbally what he wants written either by using Yes/No responses or saying some key words and phrases. Michael wants to be able to "write" for himself.

Therefore, we needed to find technology that:

- enabled him to use his sight word knowledge, rather than try to type individual letters
- increased his own head control
- allowed for a system of single switch with scanning
- enabled him to access a word processor
- enabled him to use a computer and access data from the desktop
- could be a dual tool for oral communication as well as written.

Possibilities in Technology: Michael



Time Frame and Training:

From beginning to end the trial, assessment, evaluation and application process took over two years. This was due to the complexity of Michael's needs and of the technology, as well as the availability of technology. We had to ensure he was in the best seating possible so that accessing was an accurate reflection of his skills. Each cluster of trial equipment choices then required upskilling and training of Michael, his support staff and ourselves.

The biggest challenge has been the change of school staff and therefore the need to bring them up to speed with both the technology and how it can target the learning goals for him. The training for Michael was firstly to consolidate accurate head switching and then link it into the curriculum levels he is working within. With the approval of this equipment, the school has started to look at other software that may be useful, in particular for maths. I am currently providing fortnightly visits to support his staff and ensure we are targeting his educational goals.

Total Cost including Training: $12,368.00

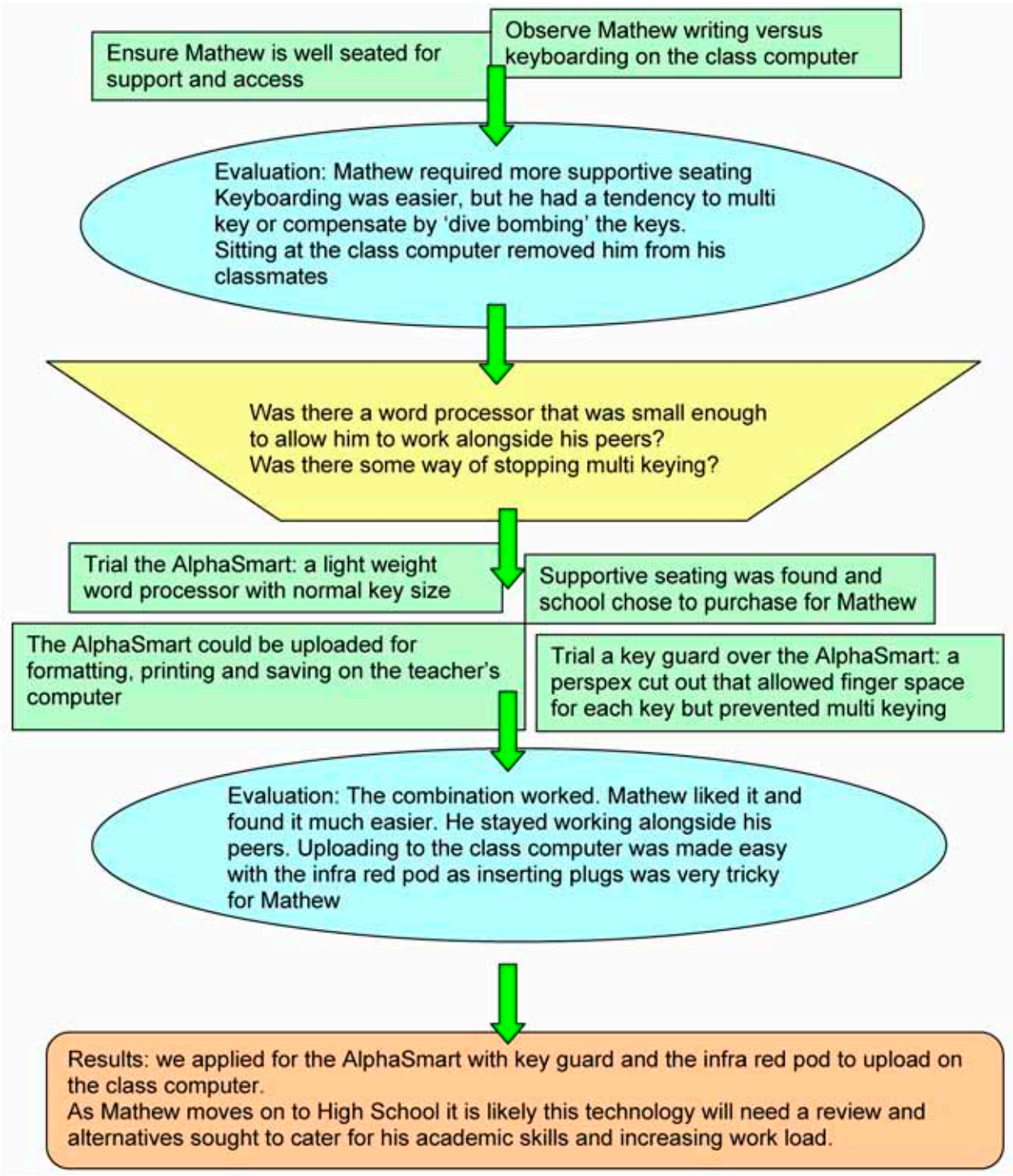
Being sure of the goal

Mathew: Mathew can write; he worked solidly on letter and word production in his early years of school. Therefore, he had consolidated the visual, perceptual, sensory, cognitive and motor skills around letter shape and form. However, writing was so effortful and 'messy' that he was dissatisfied with the results and could not keep up with his peers or his own cognitive processing. He was very keen to look at how to produce faster, legible, written work.

Therefore, we needed to find technology that:

- ☆ made written tasks easier
- ☆ reduced errors from uncontrolled movements
- ☆ increased legibility for Mathew and others
- ☆ allow for independence in producing final product
- ☆ ensured he could work alongside his peers

Possibilities in Technology: Mathew



Time Frame and Training:

The total trial, assessment, evaluation and application process took approximately 6 months. This was in part due to the fact that Matthew lived in a small, isolated community in the far north; we were working with consultants who were a five hour drive away from Matthew's school.

The trial process consolidated the use of technology for Mathew. He was quick to pick up both the filing and typing skills. We equipped him and his staff on how to plug in and send work to the computer. Ongoing training is only necessary as he moves schools and this is to equip new staff in the technology and process.

Total Cost: $1,591.00

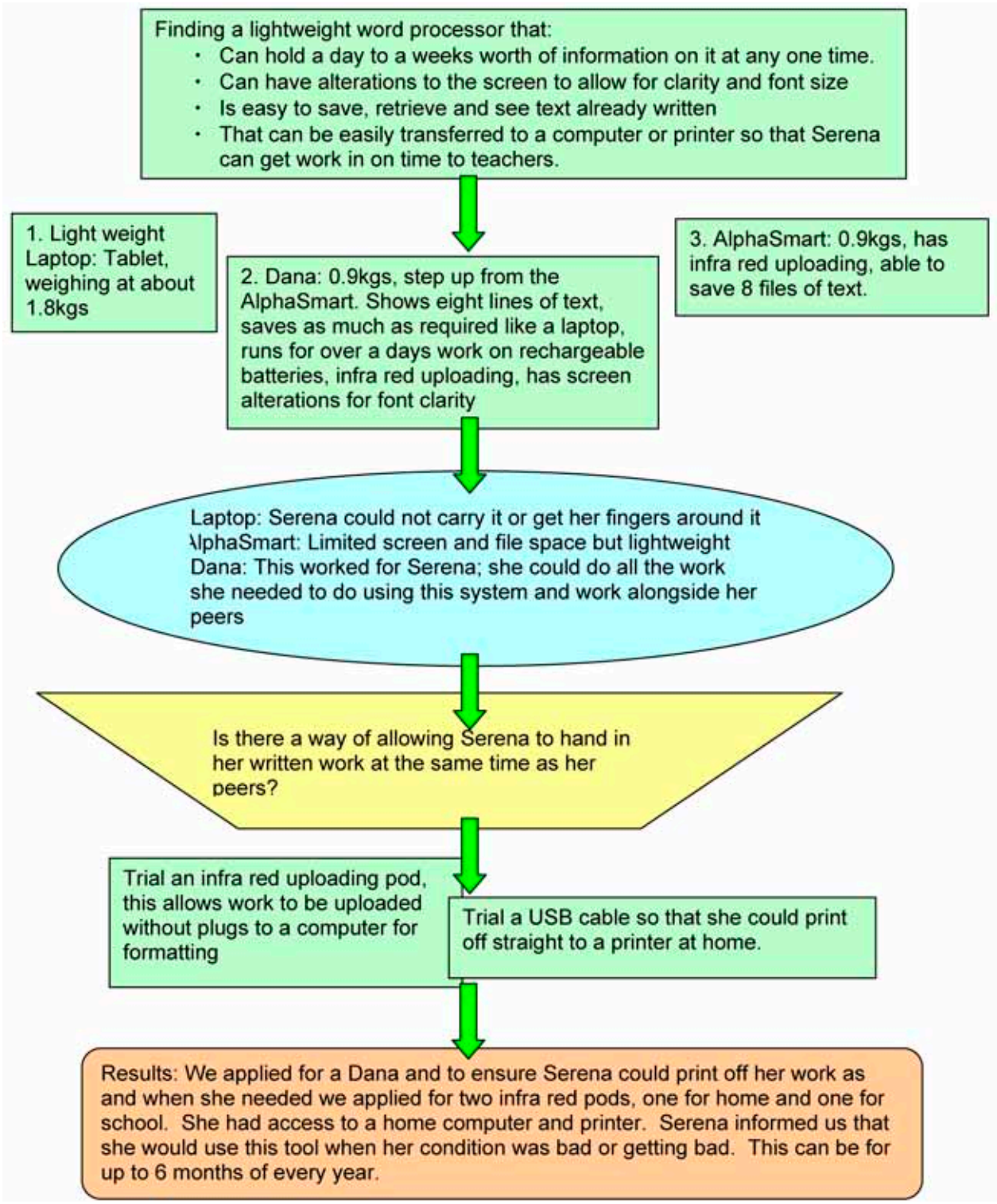
Being sure of the goal

Serena: Serena writes beautifully and up until recently was very keen to retain this as her primary form of written communication. During her last year at Intermediate School (Year 8), her SLE flared up and she found that writing became too difficult and was therefore, willing to look at how else she was going to keep up with the demands of school work. Serena moves between 5 to 6 classes a day, any system she uses must be light to carry. She does not want a Teacher Aide supporting her if possible and wishes to work alongside her peers.

Therefore, we needed to find the technology that:

- ☆ did not produce the pain and fatigue that she currently had with hand writing
- ☆ enabled her to sit with her peers
- ☆ enabled her to carry all her school gear between 5-6 classes/day
- ☆ enabled her to hand in written work alongside her peers
- ☆ was quicker and more sustainable than handwriting

Possibilities in Technology: Serena



Time Frame and Training:

The total time from trial, assessment, evaluation and application took approximately eight months. The need was indicated at her last year at Intermediate school and we put trials on hold over the six week summer holiday period. Serena had already developed the initial keyboarding and filing skills. We have had to spend time communicating and training with home and school around how to use the uploading system and then teaching Serena how to effectively sort and save her work in a computer. This training is continuing as we match Serena's needs with the capacities of the technology.

Her condition is now in remission, however she has lost further range of movement and is realising that keeping up with her keyboarding is important as she will need to consolidate this skill especially if she wants to go to University. She also informed us that as her strength was better now, that maybe in her future we might be able to look at a laptop for her.

Total Cost: $1,454.00

In Summary:

The need for access to written communication has helped to drive us to reach the best outcome for each of the students we have worked with.

The trial process at times has been very long: for Michael the ongoing trial process was well over a year and in fact still continues. However, when a student has complex issues I don't think we can rush the process.

Our results or decisions around technology are also reflections of what we know to date, as well as the current skills of the student. Therefore, it is assumed that as we gain further skills, have more options and the students grow in their skills, then they may receive better services in the future with other choices of technology.

Listening to parents, teaching staff and most of all to the students was essential to find the best solution.

Technology is not the solution; it is part of the process of enabling students to reach learning goals and therefore, will always need reviewing. It is something that we can all learn about ; teaming is something we can all facilitate.

Cindy Stewart
Occupational Therapist, Technology Coordinator

Tai Tokerau
New Zealand

Resources: Ministry of Education (January 2000, revised July 2002) *Assistive Equipment: Supporting Students with Special Education Needs.*

PAKISTAN

Mrs Musarrat Abid,
Deputy Director, National Institute of Special Education,
Directorate General of Special Education, M/o Women Development,
Social Welfare & Special Education, Islamabad

EDUCATIONAL SUPPORT FOR CHILDREN WITH DISABILATIES AND THE UTILIZATION OF ICT

Pakistan is committed to become ICT driven nation and envisages to ensure the accessibility of ICT related technology to all the citizen including children with disabilities.

Information and Communication in our context refers to the way information, experiences and news is exchanged between individuals and/or groups of people. For people with hearing, visual and speech impairment, the process of communication demands different manners. It can be used for speech training and many other skills development in children with mental retardation through relevant games and exercises. We believe that assistive devices, tools and technologies can help this communication process better.

Pakistan is actively engaged in the commitment of promoting and protecting the right and dignity of persons with disabilities since 1981. While taking many steps for the betterment of persons with disabilities we have successfully finalized the first ever National Policy for Persons with Disabilities, 2002. The policy was formalized after a lengthy consultative process involving the relevant Federal Government Ministries, such as Education, Health, Labour and Manpower, Housing and Works, Science and Technology, Planning and Development and their views were incorporated. Provincial Social Welfare Departments and Prominent NGOs were also consulted in finalizing this exercise. It was decided that use of computers for education and training of persons with disabilities will be promoted in Federal and Provincial Govt. Special Education Centres. Private Sector will be involved in this system along with the public sector. Options open for the general public in this fast expanding field will be made available to persons with Disabilities.

Moreover, recommendations prepared during the International Seminar and Regional Demonstration Workshop on Accessible ICT and PWDs held at Manila this year are being considered for the utilization of ICT to provide educational support for children with disabilities.

Technology is often presented as a solution to a whole range of social and educational problems. It provides rich learning environment in effective learning/teaching, note taking, writing

assistance, access to reference material, cognitive assistance, instructional purposes, evaluation of academic outcomes, and material modification. Children with Disabilities can experience the joy of playing and experience a feeling of solidarity at the computer since it offers a communicative form that can adapt stimuli to the child's need. ICT can go well beyond the current Text Book and class room model to help achieve a quality education system. ICT can increase tutor's time with students by reducing administration duties. For pupils with physical disabilities, visual impairment or pupils with communication difficulties the ICT can create possibilities for inclusion.

Using computers children with special needs can solve the complexity of mathematics, develop language, learn graphic skills, eye hand coordination, sitting behavior and concentration.

Information Communication Technology encompasses a range of technologies including the use of computers, microelectronic devices and communication technology. In educational context it would mean the ability to manipulate the information and communicate it to others (here we mean to our special children) through sophisticated tools and devices.

Due to the paucity of funds research and development in the field of ICT based assistive technology for providing educational support to the children with disabilities remained very limited in Pakistan. Nevertheless, Non-Government Organizations are striving hard in this area. Low cost hearing aids are being manufactured in a laboratory set by Deaf Education and Welfare Association, Karachi and Speech and Hearing Center, Mardan. Ear moulds are also fabricated in the laboratories set by these centers. Efforts are being made to assemble Speech Trainer in Speech and Hearing Centre, Mardan. Loop system has also been installed at Speech and Hearing Centre, Mardan. Audiologist at the Center with the help of other engineers in the field of assistive technology is planning to develop a program for the assessment of hearing loss, adjustment of hearing aid and speech therapy through computer.

Educational software related development in ICT has undergone to the extent that literacy of national language i.e. Urdu through the computer is possible. However Microsoft tools are being utilized to develop many programs for children with disabilities e.g. animation of sign language and adaptation of JAWS program. Computer literacy for visually impaired and hearing impaired children is being arranged by some non-government organizations. A computer laboratory with the assistance of Sight Savers International has been set up at National Library & Resource Center, Islamabad.

The prevailing situation regarding the provision and use of augmentative and alternative devices at government sector is very limited. Few electronic gadgets, e.g. sound indicator, speech synthesizer, and symbol charts are available at National Institute for the Handicapped, Islamabad. With the financial and technical support from some International Organizations like JICA, Sight

Savers International, Norwegian Association of the Blind and Partially Sighted, we have been able to provide some equipment including Braille production unit, CCTVs, computer with speech synthesizer etc. Some local philanthropists have donated computer to many centers. However, MAKATON System of communication development is being used at a non-government organization. Training of teachers for adopting this system of communication development is being arranged by NISE, Pakistan.

Like other countries ICT is in practice in the education of children with Disabilities. Although the most advanced technology is not available to the children with disabilities yet the computer is used for vocabulary development in language deficit children. Close Circuit T.Vs and magnified Text at computer is used for low vision children. Braille, embossed print and narrator are used for blind children. Computer for the children with mental retardation and allied behavior problems is being used to develop skills such as eye hand coordination and developing sitting behavior and concentration. Narrator and frequency adapter in the computer is useful for the children with hearing impairment. Training facilities in ICT for the children with Disabilities are provided by the public and private sector.

The computer literacy project started in Pakistan in 1985 with the objective to enable the Pakistani students (regular students) to face the challenges of the 21st century. First short termtraining course for regular school teachers was arranged through the advisory unit of UK. Then, the Pakistan Association for Computer Education in Schools was formed. Since 1985-90 PACES in collaboration with a leading bank had been running programs to spread computer literacy to the younger generation.

Unfortunately no special education teacher had an opportunity to be benefited from this project since it was a project of Ministry of Education. Nevertheless the training for special education teachers (in the centers where the computer Labs have been established) is arranged through either Pakistan Computer Bureau, Islamabad, (at the local level) or through a tutor arranged by the center incharge. Now, NISE, Pakistan is however, making efforts to arrange short term training courses in ICT for the teachers of special children.

Although the use of ICT in distance learning/teaching and course content providing is immensely very great since it is pupils' self-paced with minimal training, guided by a tutor with extensive support facilities and can support traditional classroom activities but formal distance education through ICT is not available directly for the children with disabilities. However, master level courses are presented in many fields including Special Education by Allama Iqbal Open University, Islamabad (the first Open University in Asia) , Nevertheless, Video Cassettes on Pakistani Sign Language, Braille System, CC TVs. Talking books, computer and other electronic gadgets are being utilized for the education of children with disabilities.

While concluding I would say that ICT is presumed to carry with it lot of educational facilities for the children with disabilities. The need is to increase the understanding and consciousness of the teachers and authorities to the matter, arrange training of the teachers for the utilization of ICT and the last but not least provision of facility by the public sector.

PHILIPPINES

Mr. ROMEO M. MINA
Education Program Specialist
Special Education Division, Bureau of Elementary Education
Department of Education, Pasig City Philippines

INFORMATION AND COMMUNICATION TECHNOLOGY FOR PERSONS WITH DISABILITIES IN THE PHILIPPINES

INTRODUCTION

Unknown to many, access technology is now available to enable persons with disabilities to reap the benefits of the information revolutions. Recent development in special education has pointed out that persons with disabilities can use computers effectively to gain knowledge, enhance understanding of ideas, concepts and principles.

Technology has multifarious applications in the education of persons with disabilities. Firstly, the use of appropriate technology reduces the handicapping conditions of the individual in the study and work environment and secondly, application of the enabling technology enhances the learning potentials of persons with disabilities. Furthermore, competence in computer technology will provide persons with disabilities greater opportunities for future job placements.

BRIEF HISTORY OF ICT IN THE PHILIPPINES

Information and Communication Technology (ICT) in the country was implemented through the collaborative efforts of Government Organization (GOs) and Non-Government Organizations (NGOs).

Access to computer technology was started after the training of Mr. Antonio Punzalan - a blind student of the Philippine National School for the Blind sent for training at the Overbrook School for the Blind, Philadelphia, USA. The one-year computer scholarship served as the entry of Computer Literacy Education for persons with disabilities in the Philippines.

Computer Training Program was started in 1993 at the HALIKA Computer Center for Disabled Persons (HCCDP) managed by the Handog Lingap ng Maykapansanan Foundation Inc. (HALIKA). Trainees were SPED teachers from the Philippine National School for the Blind (PNSB), Philippine School for the Deaf (PSD), National School for Crippled Children (NSCC) and the Braille Textbook Production Staff of the Philippine Printing House for the Blind (PPHB). Mr. Antonio Punzalan served as the instructor. Later, the program served as the basis of Computer Curriculum of these schools. Computer subjects are now taught at the elementary and secondary levels of these

mentioned schools.

The Bureau of Elementary Education (BEE) Computer Education Program

In response to the educational developments, the Department of Education (DepEd) through the Bureau of Elementary Education (BEE) envisioned a project called "Computer Education Program for Children with Special Needs (CSNs) in the Elementary School Special Education (SPED) Centers".

To gather baseline data for the implementation of the information technology in the public elementary school SPED Centers, the Bureau of Elementary Education, Department of Education conducted on initial survey. There were 12 regions, 53 school divisions and 80 school SPED centers with 433 teachers involved in the survey.

The survey yielded the following results:

- ❖ Out of 80 schools involved only 36 schools have computers, nineteen (19) of these schools are utilizing their computers for instruction purposes while the computers in the seventeen (17) schools are for office use;
- ❖ Among the 433 teacher-respondents, only 51 teachers were trained on computer literacy and only 15 of the trained teachers are competent in the use of the computers; and
- ❖ The most important problem cited by the respondents was the unavailability of computers.

It is in this context, that the Bureau of Elementary Education envisioned this project, "Computer Education Program for Children with Special Needs (CSNs) in the Elementary School Special Education (SPED) Centers".

Goal and Objective:

1. develop the capability of selected SPED teachers and administrators from identified schools as trainers on the use of computer;
2. Coordinate with the Department of Education in the Regions and Division offices, Local Government Units (LGUs), Non-Government Organizations (NGOs) on the possible procurement/acquisition of computer units; and
3. implement the Computer Education Curriculum for Grades I-VI and the use of CAIMs in Science, English and Mathematics to selected pilot schools as tools in the teaching-learning process.

Project Description

This project focuses on the training of trainers on the use of computers and computer-assisted instructional materials in the teaching learning process. This training will ultimately pave the way for the pilot implementation of the computer education curriculum in Grades I to VI and the utilization of CAIMs in appropriate learning areas.

Strategies:

1. Training of SPED Teachers and Administrators on Computer Education in the Elementary Schools.

2. Training and Development of Computer-Assisted Instructional Materials in Science, Mathematics and English, Grades IV-VI.
3. Finalization of Computer-Assisted Instructional Materials.

Success Indicator

The implementation of this project started in the year 2000 until at present. Despite of budgetary constraints, we piloted schools throughout the 9 Regions consisting of 27 divisions all over the country. For the last three years of implementation, the following activities were done successfully:

- ❖ Trained 88 teachers and school administrators representing 33 schools/SPED centers on computer basic literacy;
- ❖ Conducted training on the development of Computer-Assisted Instructional Materials (CAIMs) in Science, English and Mathematics subjects attended by 17 teachers and supervisors representing 6 regions;
- ❖ 15 CAIMs developed by teachers and administrators;
- ❖ 1 region conducted an echo-training on computer basic literacy attended by 55 teachers and school administrators representing 17 schools; and
- ❖ developed Learning Competencies and Enrichment Materials for Grades I-III on Computer Education.

Some trained teachers and school administrators have already organized Computer Education classes in their respective schools. Some cannot fully implement the said project because of the absence/lack of computer units in their respective schools.

Much to our desire to implement this project to their respective schools, we suggested them to have a networking with GOs, NGOs, PTCA, Local School Board in the procurement of computer units and other facilities.

Finally, we are doing our best for the sustainability and/or expansion of the ICT program, specifically on the integration of using computer technology in the public elementary schools.

Computer Training Program at the Resources for the Blind, Inc. (RBI)

Resources for the Blind, Inc. (RBI) is a non-government organization helping the visually impaired persons becomes productive citizens through Computer Training Program. RBI also conducted an annual Summer Training for Teachers of the Blind in partnership with the Department of Education and the Philippine Normal University. This program has resulted in the increase of enrollment of blind children in public schools nationwide.

In 1998, RBI conducted a national survey among 100 blind and low vision youth and adults to determine whom among the blind have background in computer. Only 27 respondents have knowledge in computer. Based on this result, the Computer Training Program was conceived. The program started with the organization of a Steering Committee with members from the Department of Education (DepEd), Philippine Blind Union (PBU), Resources for the Blind, Inc. (RBI) and other agencies working for the blind. RBI was chosen as the main implementor of the program with support from the Nippon-Foundation of Japan and the Overbrook School for the Blind, USA (ON-NET) in term of training, technical assistance and provision of equipment

and materials.

The program has the following objectives and strategies:

Objectives:

1) To equip SPED teachers with skills to produce the required Braille reading materials through computerized Braille embosser; and
2) To establish a computer training and computer resource center at selected high school where blind students are enrolled.

Strategies:

1) Training of SPED teachers on basic computer and on access technology;
2) Provision of necessary equipment; Braille computers with voice synthesizer and Braille embossers;
3) Addition of computer training to the regular curriculum for the blind secondary students
4) Access for individual use of computers by the blind students

In August 1999, RBI conducted the First Trainers Training on Access Technology. Five (5) selected trainers from 5 centers attended the training. After the training, Computer Centers were established in their place of work. Various other trainings were conducted in order to upgrade the knowledge of SPED teachers and blind students. These trainings were Trainors Training on Internet, Advance Training in Computer Braille Production for the SPED teachers and National Computer Workshop for Blind student dubbed as "Computer-Eyes" sponsored by IBM Philippines, Overbrook-Nippon Foundation (ON-NET).

To this date, the total number trained is 104 broken down as follows:

Trainers (both blind and sighted teachers and Rehabilitation workers)	-	14
Secondary & College Blind Students	-	72
SPED Teachers	-	18
Total	-	104

Currently, there are eight (8) school-based resource and training centers. The Library for the Blind Division of the National Library located in the City of Manila is the latest beneficiary of the program. Other Centers are located in seven cities and provinces, namely; Metro Manila, Baguio, Isabela and Pangasinan for Luzon; Cebu and Bacolod for the Visayas; and Davao from Mindanao. These Centers are catering to over two hundred (200) blind students in these areas.

ATRIEV Computer Training Program

Adaptive Technology for the Rehabilitation Integration and Empowerment of the Visually Impaired (ATRIEV) is a non-stock, non-governmental organization organized by a group of blind computer enthusiasts. The main purpose of ATRIEV is to bring information technology closer to the visually impaired through adaptive equipment and access technology.

ATRIEV Missions

1) To develop well-defined responsive and relevant ICT educational programs that will produce

skilled, value-oriented and highly motivated blind and visually impaired persons suited to the changing needs and demands of industries.

2) To establish a network committed local and foreign GOs and NGOs concerned with ICT education and employment.
3) To establish a resource center that will make ICT accessible to all blind and visually impaired
4) To promote and advocate the accessibility and use of modern adaptive technology for the blind and visually impaired persons.

Major Achievements of ATRIEV

In 1995, ATRIEV, in cooperation with the Pediatric Foundation of the University of Sto. Tomas Hospital conducted a basic computer literacy training course in Dos for the persons with visual impairment. Two of the graduates of the said training course are presently instructors of ATRIEVs latest project.

In 1996 ATRIEV held the First Information Technology Seminar/Workshop for the Visually Impaired at Las Palmas Hotel participated in by various government agencies, private interest groups and non-government organizations.

In 1999 ATRIEV assisted the Civil Service Commission in launching the first "computer-aided Civil Service Examination for the visually impaired".

From 1999 to the present, ATRIEV, the Systems Technology Institute (STI) and the Overbrook-Nippon Network on Educational Technology (ON-NET) instituted Project ATTRAC. ATTRAC is an acronym for the Adaptive Technology for Training, Resources and Access Center - the first comprehensive computer literacy training program for the blind and visually impaired in the Philippines.

Project ATTRAC's main thrust is to give a comprehension computer literacy training course to visually impaired high school graduates and young professionals. The training is conducted twice a year with ten (10) visually impaired trainees per batch. Each batch undergoes a thorough computer literacy training program for five (5) months.

The training program consists of lectures, hands-on computer manipulation, seatworks, homeworks and examinations. The trainees must pass a series of examinations throughout the course. Their performance is graded based on examination results and class participation.

The training course covers basic functions of the computer, basic commands of a screen access software program, functional knowledge of the Windows Operating System and MS office application programs including MS Word and MS Excel. Trainees are also taught how to use the fax modem, how to access the Internet and Electronic Mail. Other relevant subjects such as public speaking technical writing and transcription are also included in the curriculum.

At the end of each training session, students are graded and evaluated according to educational standards set by STI. Successful trainees will receive certificate of completion from STI, ATRIEV and ON-NET. Competent training graduates are recommended for on-the-job training to cooperating public and private institutions. Graduates aiming for higher education are integrated in selected STI regular course offerings as regular students.

As of this date, project ATTRAC has produced 67 computer literate visually impaired young adults, three of whom are now taking up regular computer-related certificate courses as scholars in two braches of STI. STI is the first computer education school in the region to accept visually impaired students into its regular program offerings.

FUTURE PLANS AND PROGRAMS

1. Development and offering of employment-oriented training programs using competency-based curriculum.
2. Full integration of visually impaired graduates into the regular computer-related course offerings of other computer schools.
3. Development and implementation of strategies and programs that would ensure the viability and sustainability of the Project.
4. Creation of a pool of capable trainors through the conduct of series of trainors' training.

With the above plans, persons with disabilities may choose to pursue three possible paths-upgrading and enhancement of present job/work, preparation for higher education and employment either as self-employed or wage employed.

CONCLUSION

The implementation of Computer Education Program in the Philippines yielded the following conclusions:

1) The establishment of computer resource centers and the training on computer technology among the students with disabilities afforded them opportunities to access information and enrich their learning in school.
2) Non-government organizations can greatly help government agencies specifically the Department of Education in promoting the use of computers in schools among students with disabilities. Networking and collaboration of agencies at the national and local levels are vital in the implementation of new programs and projects.

PEPUBLIC OF KOREA

Ms. Soo-kyoung An
Educational Researcher, Korea Institute for Special Education

Special Education Informationalization in Korea

Korea is hot for the Special Education Informationalization.

Assistive technology is defined as hardwares and softwares that are designed for supporting the disabled people. Development of the assistive technology is being evaluated as the most remarkable achievement in the area of recent special education services. Assistive technology even tends to be considered as new alternatives of the special education. In Korea, the development and the usage of multimedia teaching materials and related infrastructures to increase the knowledge-proximity of students with disabilities through the internet, computers, and the assistive technology is very prosperous in recent days, and this kind of social change is called the "Special Education Informationalization".

Background of the Special Education Informationalization

In 1999, Former president Kim Dae-jung set up the plan, "Cyber Korea 21" for the construction of creative knowledge-based country. "Education Informationalization" was a content included in this plan. Education Informationalization was derived at high speed, getting the following tasks as main achievements : the propagation of PC for students and teachers, the construction of school intranet, schools' connection to the internet, the production of schools' websites, and the development and deployment of educational softwares. It's true that the preceding change of general education field gave rise to the change of special education field, but the merit of ICT to meet the needs of individual students have been more embossed in the field of special education. In consequence, much of study by government and non-government is making remarkable progress.

Main bodies of the Special Education Informationalization

1. Korea Institute for Special Education (KISE)

In 1998, Ministry of Education and Human Resource Development established the Education and Welfare Information Center for People with Disabilities in KISE, and have offered the budget every year from time so that the center can carry out teacher in-service trainings, parents educations, and parents consultations, as well as the developing and the propagating of multimedia web contents.

2. Korea Education and Research Information Service (KERIS)

KERIS, an organization being subscribed from the government, have developed multimedia teaching-learning materials for students with disabilities with annual variation. Edunet (www.

edunet4u.net), a website operated by KERIS, is offering educational web contents for students with special needs as well as general students.

3. Korean Association for Special Education (KASE)

Korean Association for Special Education, a meeting of principals of the special education schools, have held software exhibitions for the special education teachers every year from 2000.

4. Offices for educational affairs in the cities.

Each offices for educational affairs in the cities are developing educational web contents for the special education, and are diffusing them to the special education schools and resource rooms in general schools. Some offices are operating websites especially for the deployment of educational web contents. This system is specially being used for teaching students with disabilities in home, hospitals, and institutes.

5. Teachers' circles for the research

Many teachers' circles for the special education research are developing educational web contents and are sharing them in on-line system.

Special Education Informationalization in the special education schools

1. PC possession in the special education schools

In July of 2003, total number of PC which are distributed to the special education schools in whole country is 11, 455. The number of PC per one school averages 83.6, and the number of students per one PC averages 2.1. But this statistical data is including the number of general PC that doesn't have any special application for students with disabilities. So the spearheads of computers that have special application for individual students are being more needed.

2. Use of the internet in the special education schools

Every special education schools use the internet service, and are offered much of teaching materials by contacting many organizations including KISE and KERIS. And many special education schools are operating their own websites, so that teachers, students, and parents can share their opinions and information together.

3. Use of the assistive technology apparatus in the special education schools

At present, schools are using the assistive technology apparatus like discover boards, touch pads, discover switches, trackballs, wireless keyboards, head sticks, TDD, screen enlargers, and so on. But such apparatus are not sufficient to meet all individual students with special needs.

Special Education Informationalization activities of KISE

1. Construction and operation of a distance education system

KISE, as a host station, has 8 branch stations in 8 special education schools throughout the nation, and is broadcasting the special education-related lectures to those branches in the form of moving images for teachers and parents in all over the country.

2. Operating a website

KISE operates its own website, and offers many-sided information to students with disabilities,

their parents, and their teachers. People can get a downloading service of studying reports and training materials which are developed by KISE. In the website, there are cyber spaces for teacher-communities, too.

3. Development of multimedia teaching materials for the special education.

KISE develops multimedia learning materials for students with disabilities, and is offering them to the special education schools of all over the nation in the form of CD. On the other hand, through loading the sofrwares on their websites, KISE makes teachers and students use them .

4. Holding the Special Education Informationalization Festival

In July 2003, KISE holded the Special Education Informationalization Festival in campus of a certain college placed in Kyung-gi-do. This festival included an information searching contest for students with disabilities, informationalization-related workshop for the special education teachers, and a pop-concerts of popular stars. KISE plans to hold this event once every year.

Future Direction

Korea is going to increase budgets for development and deployment of educational softwares that have more excellent quality especially for teaching students with disabilities in home, hospitals, and institute, and for solving the problem of the proximity of students with visual and hearing impairments.

SRI LANKA

Mr.Hetti Pathirage Nimal Lakshman
Deputy Director of Education, Ministry of Human Resources Development, Education and Cultural Affairs.

General:

Population:	19 million - children 5.5
Religious:	Buddhism, Hinduism, Islam, Christianity
Races:	Sinhalese (73%), Tamils (18%), Muslims (7%), Burghers,
Official Languages:	Sinhala, Tamil (English - Link Language)
Currency	Rupees and Cents
UN Exchange Rate:	US $ 1 = Rs.95
Fiscal Year:	Calendar Year
Per capita GNP (US $):	652 (1994), 709 (1995), 850 (2002)
Population;	1994 - 17 (Million)
	1997 - 18 (Million)
	2002 - 19 [(Million), Estimated]

Land:	Land area:	65,610sq. k.m.	
	Land use:		
	Cultivated:	25,589 k.m.	39%
	Of Which irrigated:	5249sq. k.m.	08%
	Forest and woodland:	16318sq. k.m.	25%
	Other Land:	23703sq. k.m.	36%
	Total:	65,610sq. k.m.	100%

Health (5.7 of total expenditure)

Infant Mortality rate: 26

Life expectancy at Birth: 70.7 Years Male, 75.4 Years Female

Access to safe water

(Pipe borne water)

Urban - 48.5%

Rural - 51.1%

Estates - 65.6%

Overall - 17.7%

Access to sanitation Overall - 50%

Population per Doctor: 14.6 (Doctors per 100000 population)

Population per hospital: 280 (beds per 100000 population)

Education (32% of total Expenditure)

Net School enrolment

Primary:	84.4%
Secondary:	82%
Combined Primary and Secondary enrolment:	88%

Adult literacy rate

Male - 93%

Female - 84%

Total - 91%

Schools: 11000

Universities: 14

2.0 Expansion of the field of Special Education in Sri Lanka

In Sri Lanka, the first educational programme for the impaired children was started in 1912, starting with the school for the Deaf and Blind at Ratmalana

The second school for the Deaf and the Blind was established at Kaithady in Jaffna and these were followed by the establishment of several other schools such as the one for the Deaf at Ragama and another for the Deaf and the Blind at Mahawewa in 1935.

The idea of these schools were cherished and educational opportunities for the impaired children were provided later.

The Department of Social Services has taken necessary actions to give charitable support to these institution.

In 1939, the government gave the opportunity to these schools to join the government and get courtesy from the state. However, in 1948 the government stopped all assistance to schools those which did not join to the government.

It was decided in 1944 that the salaries of 75% of the teachers in assisted schools are to be paid by the government.

In addition, under the recommendation of the National Education Commission the free education was started for the children between the ages of 06 - 14yrs.

In, 1968, the Integrated Special Education Programme was established by the Ministry of Education and 17 Blind students were located to be placed in government schools. Introduction and expansion of integrated education programmes in regular schools all over in the country is

a long lasting achievement in education in Sri Lanka. It is important to note that before the establishment of integrated programmes, eight (8) teachers were trained at Vidyodaya University with an incentive allowance of 10% of the basic salary

The Teachers College continued the teacher training programme from 1970 so as to meet teacher requirements for children with visual impairment.

In 1971 the teacher training programme for the Hearing Impaired children was started at the same Teachers' College.

In 1984, a Post Graduate Diploma course for the education of children with intellectual disabilities was started and the above course was inaugurated in 1985 at the Teachers' College, Maharagama as a teacher training programme.

The Special Education unit at the Ministry of Education was started in 1971. 17 years later, in 1988 National Institute of Education took steps to establish a section in Special Education at the institute.

By the year 1989 Ministry of Education took action to promote 21 supervisors to staff officer level, with the intention of increasing the quality of Special Education.

3.0 The current situation of the field of Special education

The integration programme which was started in 1970, is still functioning all over the country and teacher training programme in three major areas are too conducting at the Maharagama Teachers' College, to provide required trained teachers for the above programme.

However, recently, in 2002, the new three year Special Education Course was started at The College of Education in Hapitigama and 30 teachers could be trained in each batch.

The Special Education section at the Ministry of Education which was a separate department earlier, has amalgamated with the Department of Non-Formal Education today. Same situation exists at the National Institute of Education today. The Special Education that functioned as a separate department many years ago, has joined hands with Department of Primary Education.

According to the educational statistics there are nearly 1350 Special Education trained teachers working in the system today and parallel about 450 teachers are working in assisted special schools in the country. Thus over 15000 children with Special Education Needs get direct Special Education Services from the above teachers.

4.0 Inclusive Education

The inclusion of pupils ? With Special Educational Needs in the classrooms of regular schools is apart of a large. World Wide movement which calls for the inclusion of all people with disabilities in all aspects of life.

Sri Lanka as a country which signed the Universal Conventions which include the concept of inclusion is getting ready to implement the inclusive education to the fullest in the Educational System.

The first national conference on Inclusive Education is planned to be held in mid December 2003. The main aim of the conference is to actively contribute to the policy and practice development resulting in increased and improved Inclusive Education for all in Sri Lanka.

5.0 Special Education, Technology and ICT

In a technology based society, it is important for the children to learn to use technology in order, to play a complete role in that society. This applies to information and communication technology (ICT) too. The ability to participate in the cyber community gives an individual the skills to enter the world of digital information supply and acquire daily living requirements, entertainment and much more.

However, educational authorities for children with SEN have a key role to play in this process. They must organize the education they provide in such a way that integration into society and regular education opportunities, and meaningful activity in the form of work or other occupation is possible. ICT in education must be geared to integrate children with SEN into society.

6.0 Special Education Policy and ICT Education

As, I mentioned earlier Sri Lanka is getting ready for the preparation of policies for Special Education. When developing an ICT policy in Special Education we consider the following important areas.

- National Educational Reforms and objectives.
- ICT skills expertised teachers.
- Available programmes for children with SEN.
- Available equipment.

These areas must be properly balanced if ICT is to be successfully integrated in to education. This means all the areas must be given equal attention. Or else the least developed aspect too, will contribute to determine the level attained.

7.0 Limitation of ICT Education the Children with SEN

In recent years, ICT has done a great deal in integrating students into regular education, and

also in Sri Lanka with the help of government and as well as private section.

However, when planning education and use of ICT in Special Education, it is crucial to ensure that ample ICT equipments to be used not only in schools, but also in homes. Sometimes also in follow on education and in the individuals subsequent job. Thus various following factors may effect on decision making.

- Available financial resources.
- The strategies governing the education of children with SEN.
- The Deployment of ICT in other forms of education.
- Opportunities for using ICT at their homes.
- The form in which services are provided to children with SEN and disabled people in the country.

8.0 Training of Teachers for the utilization of ICT

The need for rigorous programmes of initial and ongoing professional and personal development were highlighted throughout different researches. Teachers may need to acquire skills in managing every area in education including ICT too. This must consider the demand of the ICT education and visits of different sources where teachers can improve their ICT knowledge.

All teachers should occur the ICT skills for promoting following skills of the children with SEN.

- Ability to attend the same courses as other people, in the same way and at the same time.
- The ability to be considered for the same jobs as other people and to be afforded the same opportunities for promotion.
- The ability to make use of the same opportunities for communication as other people, such as e-mail and other electronic communication.

9.0 Suggestions to use Information Communication Technology for Development of teachers of the field of Special Education.

8.1 Adequate ICT knowledge should be given to all teachers of the field of Special Education.

8.2 Modern ICT equipment should be provided to all Special Education Units.

8.3 ICT methodologies should be introduced to the all new teacher training courses in the field of Special Education.

8.4 International training opportunities of ICT should be offered to the teachers of the field of Special Education.

8.5 Research opportunities regarding ICT should be expanded in order to involve all teachers of the field of Special Education.

8.6 Same ICT training programme of the regular teachers should be allowed to follow the Special Education teachers in expanding the Inclusive Education concept.

THAILAND

Ms.Puangmanee Chaiseree
Chief of Planning and Budgeting Group,
Bureau of Special Education Administration,
The Office of the Basic Education Commission, the Ministry of Education

THAILAND REPORT
on
EDUCATIONAL SUPPORT FOR CHILDREN WITH DISABILITIES AND UTILIZATION OF ICT IN SPECIAL AND WELFARE SCHOOLS AND CENTERS.

(1) Policies and measurements for utilization of ICT in the education of children with Disabilities.

The Royal Thai Government has stipulated policies and missions to develop people with disabilities by formulating the following laws and visions:

1. The Disabled's Potentials Rehabilitation Act, B.E. 2534 (2001): to develop and rehabilitate the disabled's potentials in 4 aspects: medication, education, occupation and work force, and society.

2. The Constitution of the Kingdom of Thailand, B.E. 2540 (1997), "All individuals shall have equal right to receive basic education of not less than 12 years which is provided on a nationwide basis and shall be of quality and free of charge. "Unjust discrimination against people from different race, nationality, language, sex, age, physical state or health, personal status..... is prohibited". "Persons with physical disabilities or handicapped shall have right to access the facilities and supports from the government."

3. The National Education Act, B.E. 2542 (1999). Persons with all kind of deficiency and disabilities shall have the rights and opportunities to receive basic education specially provided free of charge at birth or at first diagnosis.

4. The Ministerial Regulations, B.E. 2545 (2002): The disabled have right to access the facilities, media, services and other forms of educational aids.

5. The Prime Minister's visions : The Prime Minister of Thailand, Lieutenant Dr Taksin Chinnawat, has stipulated visions and procedures for provision of education and development of the quality of life of the underprivileged disabled that all parties shall enable the disabled to be on their own, survive them from being a burden of the society and support them with sign language, IT experts, especially the Ministry of Information and Communication Technology should do researches and support the development of ICT use for the disabled by emphasizing the access to information and news. Education should be provided appropriately for each type of disabilities.

6. The Plan on Needs of Computer and Program for Welfare and Special Schools, and the Regional and Provincial Centers of Special Education.

The Head of the Planning Group of Welfare and Special Education Provision, Planning Division, Department of General Education, and her staff analyzed and established "the Plan on Needs of Computer and Program for Welfare and Special Schools, and the Regional and Provincial Centers of Special Education" which was first used in budgetary allocations, year 2004, and it allowed more disabled in the state service access. The plan consists of:

6.1 A set of Micro Computer for administration, and teaching and learning in schools and centers which includes one computer, a power supply, a table and a chair, and a printer.
(Remark : There should be 8 sets for administration and 20 sets for teaching and learning/a school.)

6.2 Five program computers for:

6.2.1 The blind;

6.2.2 The partially-sighted; (magnifying letters)

6.2.3 The students with communication deficiency.

6.2.4 The students with learning deficiency and autism.

6.2.5 The mentally retarded.

6.3 A scanner with OCR program.

(2) Utilization of ICT to overcome difficulties due to a disability

The department of General Education, Ministry of Education has established centers of special education in 13 educational regions and 63 provinces in 1997 and 2002 to cooperate with 43 special schools in 35 provinces in rehabilitating and educating the disabled. The centers also provide the 0 - 12 year old disabled with 3 types of education in line with the National Education Act, B.E. 2542: formal, non-formal and informal education. The state supports them with budget for educational materials which are developed from ICT as follows:

1. Materials for the blind :

1.1 Multimedia computer.

1.2 Braille display computer.

1.3 Magnifier for the partially-sighted.

1.4 Braille printer.

2. Materials for the deaf :

2.1 Computer for speaking and listening practice.

2.1.1 F.M. speaking practice equipment.

3. Materials for the mentally-retarded :

- A set of physical potentials testing instruments;
- A set of computer for the mentally-retarded.

4. Materials for the physically handicapped: wheelchairs to be used with a set of physical potential testing instruments.

(3) Research and development of ICT- based assistant technologies;

(4) Education software related research and development;

(5) Augmentative and alternative communication devices.

Her Royal Highness Princess Maha Chakri Sirindhorn initiated the ICT Project to conduct a research on production of the disabled-aid equipment which helps in communication as follows:

1. **OPA:** communication aid for the verbal disabled.
   1.1 Opa 2.3
   1.2 Opa 3.2
2. **PRASAI:** communication aid program for the verbal disabled.
3. **KRADAN LIKHIT** : reading and writing aid
4. **CAI for Early Intervention**
5. **The development of steering motor for wheelchair project.**
6. **The Development of PAL Television hardware with closed Thai-English caption**
7. **The Picture Vocabrurary Program**

(6) Training of Teachers for the Utilization of ICT

The Ministry of Education has stipulated vision, master plan on information technology for Education and communication which is comprised of 4 strategies :

1. The usage of ICT for development of learner quality;
2. The usage of ICT for educational administration and services;
3. The personnel production and development;
4. The expansion of ICT Structure for Education.

The List of Presenters at the Poster Session

Poster Number	Title	Name(s)	Affiliation of the First Author	Country
A-01	Using ICT in Teaching and Learning for Students with Disabilities: The CRFP Approach in the Design of Smart School Programs for Hearing and Visually Impaired Students in Malaysia	Mahayiddin, Kamaruzaman b.	Special Education Department, Ministry of Education	Malaysia
B-01	Computer-aided Production of Four-frame Comic Strip	Matsuyama, Miki	Kyoto Prefectural Joyo Slightly Retarded Children's School	Japan
B-02	The NISE Information Network for the Education of People with Visual Impairements	Kaneko, Takeshi Oouchi, Susumu Sawada, Mayumi Mutaguchi, Tatsumi Arai, Chikako Chida, Koki	The National Institute of Special Education	Japan
B-03	A New Attempt to Help Blind Children Appreciate Paintings	Oouchi, Susumu	The National Institute of Special Education	Japan
B-04	Assessment and Implementation of Assistive Technology in Thailand : The SETT Framework	Phantachat Wantanee	National Electronics and Computer Technology Center, National Science and Technology Development Agency	Thailand
C-01	The Effect of Window Size on Reading in Two Display Modes: Aperture and Wrap-around	Kawashima, Hidetsugu Ueasaki, Mayu Tanaka, Etsuko ODA, Koichi	Tokyo Woman's Christian University	Japan
C-02	The See-through Head Mount Display for Hearing Impaired Students	Nishioka, Tomoyuki	Division for the Hearing Impaired, Tsukuba College of Technology	Japan
C-03	Prototyping of Sound VR Game for Children with Visual Impairment	Ohuchi, Makoto Iwaya, Yukio Suzuki Yôiti Munekata, Tetsuya	Graduate School of Information Sciences, Tohoku University /Tohoku Fukushi University	Japan
C-04	A Prototype for the Use of Small Robot to Enhance Human-computer Hnteractions in the Classrooms for Children with Special Needs	Munekata, Tetsuya Funaki, Eimei Fujita, Yoshihiro Nakamura, Hitoshi	The National Institute of Special Education	Japan
C-05	An Interactive Tactile Display for Blind Children – Evaluation at a School for the Blind–	Watanabe, Tetsuya Kobayashi, Makoto	The National Institute of Special Education	Japan
C-06	Significance of Networking in Deafblind Education	Nakazawa, Megue	The National Institute of Special Education	Japan
D-01	PC-Assisted Measurement of Reading Performance with Minimum Human Intervention - Development of pcMNREAD-J and Evaluation of its Functionality -	Oda, K. Nishimura, T. Kawashima, H.	Tokyo Woman's Christian University	Japan
D-02	Development of Manuals for Personse with Mental Retardation to use Personal Computers in Workplaces	Okada, Shinichi	National Institute of Vocational Rehabilitation	Japan
E-01	Support for Self-help Group of Parents with Developmentally Handicapped Children Who Use AAC	Kono, Toshihiro	The School for the Mentally Handicapped, Faculty of Education, Kanazawa University	Japan
E-02	Expansion Substitution Equipment with which a Physically Handicapped Child's Active Activity is Assisted ～The Instruction Example using Switch Teaching Materials～	Fujita, Takeshi	Ibaraki Pref. Yuki Special Education School	Japan
F-01	Application of ICT in Classroom Learning for Children with Hearring Impairment	Gathoo, Varsha S. Mathew, Suni M. Maricar, Akhtari	Ali Yavar Jung National Institute for the Hearing Handicapped	India
F-02	Utilization of Cyber Instruction-learning System of Korea	Song, Yeung-joon Rhyu, Moon-hwa	Korea Institute for Special Education	Korea
F-03	A Study of a Support System using a Voice Recognition Technique for Hearing-impaired Persons at Lectures	Miyoshi, Shigeki Nishioka, Tomoyuki Nakase, Koichi	Tsukuba College of Technology	Japan
F-04	Application of a New HTML Browser Method of Presenting Teaching Materials to Students with Low Vision	Ujima, Kazuhito Oda, Koichi	Matsuyama School for the Blind	Japan
F-05	"COMPUTER EYES" Program	Quijano, Yolanda S.	Bureau of Elementary Education & Third Elementary Education Project, Dept. of Education	Philippines
H-01	Distance Education for the Disabled - Need and Strategies-	Chauhan, R. S.	National Institute for the Visually Handicapped	India
H-03	A Study of Curriculum Design and Evaluation for Information and Communication Literacy in Special Needs Education	Ota, Hirotsugu	Special School for Mentally Handicapped, Affiliated to Faculty of Education, SHIGA UNIVERSITY	Japan
H-04	Learning about the Environmental Problem for Hawaiian High School Students, and for Japanese Students with an Intellectual Disabilities	Yamamoto, Daisuke	Joyo Special Needs Children's School	Japan
I-01	Using the Intranet as a Developmental Support System	Nishitani, Atsushi	Mikumo Elementary School	Japan
I-02	Activities for Giving Recycled Wheelchairs for Disabled People in Asia "Barrier-free education network" –The Damaged Wheelchair to which the Heart is connected–	Mabuchi, Tetsuya	Osaka Prefectural IZUMI School for Students with Special Needs	Japan
I-04	Pupils with Special Educational Needs and Information and Communication Technology	Rathnawathie, D. K. D.	Teachers College, Maharagama	Sri Lanka

Final Report of the 23rd Asia-Pacific International Seminar on Special Education 2003

Address; c/o The National Institute of Special Education,
5-1-1 Nobi, Yokosuka City, Kanagawa, 239-0841
JAPAN
Tel:+81-46-848-4121
Fax:+81-46-849-5563