Introducing Internet Based Distance Education in Mongolia

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English for Specific Purposes Foundation

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Table of Contents:

Synthesis

This final narrative report is based upon the first set of ideas conceptualized in October 1999. Since this time the IDRC Project, Introducing Internet Based Distance Education, has proceeded from its initial stages to the completion of the project. A primary reason for the initiation of this endeavor was the need to enhance internet access among Mongolia's students and to foster community knowledge systems with an initial core curriculum that consisted of English Language Development, Information Technology, Gender Issues and Legal Rights. Community knowledge systems were defined as informal communities of learning at local telecommunication centers whereby students met with fellow learners to discuss their participation in the Internet Based Distance Education Program. It was believed that the opportunity to meet with others face to face increased motivation and lessened the common dropout rate in distance education. In order to accomplish these aims, four interdisciplinary teams experimented with the development and delivery of online-education. They created an appropriate vision for the program, and a strategic plan and concept for technology based education. They also developed local expertise in online technologies and methodologies, established experimental communities of distance learners in Ulaanbaatar and remote rural communities, and utilized Eve, enhanced vocalization engine, a tool for integration with subject substantive courses. As a means to study the effectiveness of these programs in meeting these objectives, a basic empirical approach was utilized to determine project outcomes. Emphasis was placed upon the examination of teaching and learning approaches, media, and tools to determine the capacity of Mongolian institutions to handle distance education technology as a whole. The principal findings from this project include the discovery that inter-net distance education programs are in fact an effective and viable mechanism for the dissemination of knowledge and the cultivation of skills for Mongolian students. It was also found that Mongolia's existing structure of telecommunication centers and internet cafes provide an appropriate social milieu to facilitate informal community knowledge systems that coincide with the preferred group method of learning among adolescent and adult students to maximize learning outcomes. Specific results include a newly trained group of Mongolian educators in new distance education methodologies and technologies. The development of prototype curricula and instructional materials for web based training. Guidelines for preparing, organizing and delivering web-based training for Mongolian institutions have been created. A set of manuals for web based instructional methodologies. An operational interactive learning tool for English pronunciation based on the EVE prototype. A depository of selected resources on distance education relevant to Mongolia is now available. A website for sharing knowledge with other IDRC supported initiatives in other countries is currently on-line. A report of the Mongolian experience with new technology-assisted distance education and recommendations for further development of technology-supported distance education in Mongolia has been created. And contributions toward MOSTEC's vision and strategic plan for technology-based education in the country have been made. These initial results have played a very significant step toward providing government, business and the general public with the opportunity to learn about gender issues. It has provided students, youth, and teachers with an opportunity to learn about legal issues, human rights and democracy. It has also

provided youth and adults with entry-level information technology training. It has provided opportunities for English language development for employment and post-graduate studies. And lastly it has provided women who need to develop English language skills with an opportunity to share information about their respective situations at international women's conferences. The significance of these achievements may not be overstated as the actualization of these goals on a wide scale would undoubtedly have a major impact on the development of Mongolia and enhance its ability to compete within the vast global economy. The developments within this project also provide educators, government officials, legislators, public policy experts and other concerned parties with very concrete information on the benefits of internet based education programs and their impact upon the quality of life for local citizens.

Research Problem

The rationale for the project was first formulated as a result of growing recognition of the need for a development policy to increase the diffusion of communication and information technology in the education sector as a means to facilitate effective educational reform. This priority was clearly articulated by R. Bat-Erdene, state secretary of the Ministry of Science, Technology and Culture (MOSTEC) in a speech for the opening of "School Internet 2000" at a conference entitled "Communication and information technology in education of Mongolia: current state and future development". Of primary concern was the speed of technological change, the scarcity of resources, dilemmas in technology choices and the urgent need for educational reform. As an initial goal it was stated that distance education should be available to 75% of the population by the year 2010.

There was however an admission that such a goal could be out of reach. Obstacles for achieving the stated goal at the very outset did seem to be quite formidable. A major concern was what appeared to be a double-edged sword. While the demand for distance education leads to telecommunications, the very infrastructure to support such technology in Mongolia and other developing countries cannot be afforded or easily managed by them. Empirical research has also pointed to the dearth of "soft infrastructure development" such as materials production, organizational systems and training programs for national staff to initiate and support the rapid expansion of distance education that is taking place in developing countries.

It should also be noted that informal conversations with educators familiar with cross cultural issues in education have indicated that despite the great value placed on education in Mongolia, an impressive literacy rate among the general public and a motivated and talented student body, the lack of material resources and limited opportunities for fruitful exchanges with people on the cutting edge of development, often prove to be a significant hindrance to students who might otherwise compete with students from more privileged circumstances. The need for distance based education programs to begin to close this gap and provide windows of opportunity for students in developing countries is more than essential. And the promise of the tangible benefits of new sources of information and innovative educational technologies must be realized, if only on a steady incremental basis.

Research Findings

While this research project is certainly no panacea for the myriad challenges that may impinge upon the implementation of internet based education it does however demonstrate that firm resolve, and a willingness to refine strategies, and implement pragmatic solutions to novel situations is in the long term interests of Mongolia's students, and students in similar circumstances elsewhere. To begin to describe, highlight and interpret the project from a scientific and policy perspective, it is however, necessary to emphasize that the implementation of the project was only made possible through the mutual cooperation and shared responsibility of the parties involved. In this particular case these parties were the ESP Foundation-English language team, InfoCon Co. Ltd- Information technology team, DataCom. Ltd- Software team and Women's NGO gender team who provided a variety of expertise in achieving the projects objectives in their own respective areas, and contributed to the effective implementation of the project as a whole.

The significance of mutual cooperation and shared responsibility is especially important as the implementation of internet based educational programs requires the involvement of a variety of private and non-profit organizations to be successful. Effective long term strategic planning is critical. And this surely involves the ability to evaluate the capabilities of the various parties involved, to make proper choices about the involvement of potential parties, and provide remedial instruction if necessary. This should be done prior to the onset of the project. This will insure that each of the programs subcomponents can function adequately and has the necessary resources to fulfill its obligations. As this program was however a pilot project the learning curve was steep and ad-hoc adjustments were necessary as problems arose. The ability to anticipate and minimize such problems prior to the onset of a joint plan of action may however be extremely helpful in maximizing positive outcomes whenever possible.

Other important research findings that are important from a scientific and policy perspective have been gathered from quantifiable results and have also been reported within this section. But because this program involved a number of disparate components, the significance of each relevant finding will be highlighted whenever possible with an effort to make generalizations about the implementation of the program in its entirety.

With this in mind the research findings indicate that the program was effective in assembling a diverse core of people that included teachers, teacher trainers, government officials, administrators and policy makers within the field of education to provide quality instruction for the development of internet based teaching methods. The program demonstrates that a standard group workshop approach is effective for the cultivation of the requisite skills. Yet further development on the measurement of the required skills and the ability to disseminate such information to actual students in a naturalistic setting may be desirable. In the future it is also quite important that adjustments in teaching methodologies will be required as the technology for inter-net education programs evolves. And while the potential for change within the field of

inter-net education may provide formidable challenges as ongoing adjustment may be required, Mongolia has the necessary human and material resources to make the necessary changes if similar workshops and other forms of education with necessary social support systems are maintained and introduced on a much wider scale. Further scientific research and public policy analysis could focus upon the nature of social support systems and the quality of student teacher interactions as a means to maximize positive outcomes in learning.

In addition to these findings an effective model for the development of prototype curricula and instructional materials for web based training for Mongolian institutions, a set of manuals for web based instructional methodologies, an operational interactive learning tool for English pronunciation based on the EVE prototype, a depository of selected resources on distance education relevant to Mongolia, a website for sharing knowledge with other IDRC supported initiatives in other countries, a report of the Mongolian experience with new technology distance- assisted education in Mongolia and recommendations for further development of technology-supported distance education in Mongolia and contributions toward MOSTEC'S vision and strategic plan for technology based education in the country were achieved.

Each of these achievements which enhanced the expanding sea of knowledge about the internet and information technology were only made possible as a result of the diligent efforts of a variety of program staff who often made hard earned discoveries in areas of applied research in which there was very little protocol. The significance of such efforts is just beginning to be realized as the increasing knowledge base is expanding in conjunction with a growing demand for information. The newly developed teaching curricula, manuals for instructional methodologies, a depository of resources on internet based education, a website for sharing knowledge with other countries, and a report on the experience with distance education in Mongolia are fine examples of this trend.

From a public policy and scientific perspective these achievements, however modest, are quite impressive as the rational for this research is specifically tailored for the real social and political developments that are occurring in Mongolia that have set the stage for significant human development. Vast portions of the population have been greatly affected by the tremendous increase in new media that has flowed into Mongolia as it emerged as a democratic nation in the early 1990's. Mongolia's young adults, in particular, have demonstrated an increasing interest in the English language, and the development of other skills, which will provide them with more opportunities to participate in the ongoing events in the international community. A significant interest in the inter-net is also quite apparent as well.

It is reasonable to assume that the knowledge base of Mongolia's students who have access to the inter-net is also expanding rapidly. As a means to provide accurate information to legislators, community activists, and educators further scientific research would be extremely valuable to devise scientific methods of measurement to establish whether a cause and effect relationship between access to electronic media, educational attainment and economic growth exists. If suitable empirically based information is available to support such development internet based education may receive its fair

share of financial support and play an important role in remedying the deleterious effects on student education that have occurred as a result of a lack of material resources in Mongolia. This new technology combined with appropriate forms of social support in conjunction with effective teaching methodologies are likely to have a significant positive impact upon Mongolia's fast changing society.

Fulfillment of Objectives

In support of these findings it must be noted that the original broad objectives as set forth in this research proposal were achieved. It however must also be reported that several, logistical and managerial dilemmas occurred as the various interlocking program parts came together. The various personalities, work cultures, educational backgrounds, personal experiences and fields of expertise were quite diverse. Rather than a hindrance however the diversity of people involved in the project in the end contributed to the realization of these objectives. It should also be noted that the problems that did occur tended to be minor in nature.

In regard to the need to train Mongolian educators in new distance education methodologies and technologies, 37 people worked on the project teams for varying lengths of time. They were trained to design, develop, deliver and use inter-net based distance educational programs. They gained valuable theoretical and practical knowledge, valuable skills and became familiar with the methodology and ways of implementing these programs. In addition over 90 people have attended training workshops and seminars and gained knowledge and practice on Internet based distance training.

On the designing of curricula instructional material was designed for subjects that include Mathematics, English Language, Gender Issues, Web Design, Excel, Mongolian Language Spelling Rules and Macromedia Flash. Specific lessons included examples for learning key concepts, exercises to polish skills, self-evaluation tests, and tests to measure progress in the acquisition of specific skills. The curricula for mathematics consisted of 28 lessons, 47 exercises, 48 homework assignments, 15 glossaries for a review of material and 12 tests. The curricula for English consisted of 27 lessons, 111 exercises, 30 homework assignments, 188 glossaries for a review of material and 3 tests. The curricula on Gender Issues consisted of 12 lessons, 39 exercises, 5 glossaries for review and 3 tests. The curricula for Web Design consisted of 5 lessons, 11 exercises, and 41 glossaries for review. The curricula for EXCEL consisted of 20 lessons and 69 lessons. The curricula for Mongolian Language Spelling Rules consisted of 7 lessons. And lastly the curriculum for Macromedia Flash is composed of 10 chapters for people who are just beginning to learn flash.

The curricula for Mathematics incorporated chapters of math lessons for grades 5-10 in Mongolian secondary schools. The lessons were developed in accordance with the requirements of on-line inter-net based distance education training standards. The curricula was then improved as one teacher, and one teacher consultant, conducted tests upon a group of ten grade 8 secondary students from secondary school number 5 in Mongolia's capital city Ulaanbataar. As the content was designed to test progress in

arithmetic experimental tests were given to determine whether the students absorbed the core content. The pupils' recommendations were considered and necessary adjustments were made. The experimental tests then revealed that an effective teaching methodology had been achieved.

The curriculum for English Language Development was designed with the realization that there are very few books that have explanations in the Mongolian language or have been written specifically for Mongolian people. With this in consideration 5 teachers from the ESPF participated in the development of the newly designed content for English Language development to be placed upon the web. As a means to test the teaching methodology contained within the design of the curricula two groups of students, a group composed of adults and adolescents were engaged in experiments to pilot the project.

The teachers found that the students learning styles generally fell into two distinct groups. Some students wrote notes as a way to absorb the lesson content. Other students utilized the self-assessment test to measure their ability to acquire the requisite skills. The teachers indicated that the self-assessment tests were particularly helpful as the students had the opportunity to practice and correct mistakes. Additional material was added containing specific explanations and a glossary of information was created to provide students with additional help should they encounter problems with new vocabulary.

The curriculum on Gender Issues contains specific information about equal rights and has been developed in such a way that it can be used to supplement material that is a part of other courses from various institutions. As a means to test the suitability of the course content a number of experimental lessons were created with the assistance of 8 students at the College of Law at the Mongolian State University. Experiments with the course content revealed that the current design is effective in explaining basic legal concepts that allow women to be informed about their legal rights and to seek recourse if they are violated. The curriculum is designed to empower women. It has also been created to educate men about inequities in society and methods of recourse to achieve a more just society.

The curriculum on Web Design, Excel and Macromedia Flash also yielded good results. For the Web Design course a front-page program for designing websites was utilized. The program was selected because of the simplicity of the design. The program can be used by anyone who is familiar with Microsoft Office. And as an aid to increase the clarity of instructions the lessons contained specific explanations of all technical terms. The Excel course is composed of 7 chapters and 20 lessons. The scope of learning proceeds from basic introductory lessons to complete mastery of the program. Every lesson contains well-written examples to explain the course content as well as specific exercises to master the requisite skills. The Macromedia Flash course consists of ten chapters and has been written for people who have no previous experience with this medium. As with the other programs experimentation and minor adjustments were necessary to maximize learning outcomes.

A basic booklet on how to organize and run internet based educational programs was created with express guidelines for teachers and course designers. The booklet contains recommendations for the development of inter-net based lessons. It also includes instructions on how to prepare tests, to study the course content, to take tests, and to design models of instruction to maximize student learning outcomes. The guidelines and recommendations have been developed for teachers who are interested in on-line course distance education lessons. The booklet gives information on development of the content of electronic lessons, selection of lessons, working out the web model, selection of test questions, development of model lessons, selection of test questions, development of model lessons, and what should be taken into account in conducting experiments and piloting. It also instructs both students and teachers on how to use EVE. It also helps students to utilize the student's corner a program component for checking test results, taking tests, with specific instruction on note taking and computer search strategies. It also helps teachers to develop new courses, design tests, correct and interpret student test results, register students who withdraw from courses, keep attendance records and extend the duration of registration.

It must also be noted that a program for the improvement of English language phonetics was designed specifically for Mongolians. The program was developed in conjunction with EVE- Enhanced Vocalization Engine which is interactive multi media pronunciation software. This software shows how the tongue and lips move when pronouncing 44 sounds, which includes 20 sounds for vowels and 24 sounds for consonants. Mobile pictures with graphic depictions of the pronunciation of 164 words were developed with sound comparisons containing identical and similar units of sound were also introduced. The words and sounds that were contained in this program were selected as they pose particular problems for native speakers of Mongolian.

And lastly the depository of selected resources on distance education relevant to Mongolia, the web-site for sharing knowledge with IDRC supported initiatives in other countries, and a report of the Mongolian experience with new technology assisted distance education, and recommendations for further technology supported distance education in Mongolia are well written sources of information. They can be very valuable to a large number of people with interests in this area. Comments about these items have been favorable up to this point. And they continue to be used on an ongoing basis. Each of them has been constructed in part to promote MOSTEC'S vision and strategic plan for technology based education.

Project Design and Implementation

As previously stated the activities supported under this project were implemented by the English for Special Purposes Foundation, InfoCon.Co., Ltd., and Datacom Co.Ltd and Mongolian Women's NGO Coalition.

ESP Foundation is a non-profit educational institution established to prepare Mongolian professionals to do their work efficiently in the workplace, where English Language is required. The main ESPF courses are: English for Business, for Economics, for Banking, for Science, Medicine, Technical English, as well as special courses for

Journalism, Tourism, for Teenagers, for pre-IELTS courses, for departure, for teacher training and summer courses. ESPI is an officially recognized testing center for international English language tests required by students going abroad to study, such as IELTS. In February 2000 it gained affiliation to the International House World Organization.

Dedicated to offering ICT consulting services in Mongolia, the mission of InfoCon Co., Ltd is to help organizations, companies and individuals to benefit from the use of ICT by providing professional consulting, research, training and technical services. InfoCon assists clients with training on the use of computers and information technology applications, training of staff on designing the web page, training on the benefits of IT, training on policy and legislation relative to the development of IT infrastructures in developing countries, particularly in Mongolia. Although it is a relatively young organization, its already distinguishing itself as an organizer of ICT related workshops/seminars, including School Internet-2000 the international conference held in Ulaanbaatar in that year.

Datacom Co. Ltd is the leading provider of data communication in Mongolia. Since February 1994, it has been providing a range of services to government, private organizations and individuals. Datacom has more than 80 employees in 4 subsidiary companies. Datacom has 2 branch offices, Public Internet Center and Customer Service Center. The technology department is also subdivided into engineering and software development groups. Its primary activities include internet services for access, web development and fax services, a domestic data communications network, wireless metropolitan area networking, application and software development, training, e-commerce, business solutions and electronic payments. Datacom has been IDRC's project partner in Mongolia in the field of ICTs since October 1994.

The Mongolian Women's NGO Coalition is a non-profit government organization that promotes gender equalization in decision-making positions. Its main objective is to support and prepare female candidates for the general elections through training on electoral skills and access to information, and through working towards influencing laws and rules regarding election nomination. The coalition is also the secretariat for the National CEDAW Watch Network Center. CEDAW stands for the United Nations Convention on the Elimination of all Forms of Discrimination Against Women. CEDAW collects information and data, expresses its opinions regarding governmental policies on women, draws recommendations on those policies as well as suggestions to amend existing laws, and conducts public education and awareness raising activities on gender equality issues.

The various personnel involved in this project from these organizations adhered to a basic methodological approach that guided their interactions. A basic empirical method was used whereby administrators of the project sought to create the necessary developments as quickly as possible, but to also test extensively and repeatedly, using the information gained from each pilot to refine and improve subsequent projects both in Mongolia and elsewhere in the region. From this perspective they looked upon this project as a prototype of a series of technology-based distance education projects that

they would be developing under the framework of the new Prospectus.

The project design was implemented as a means to increase the capacity of a core group of Mongolian institutions to handle distance education technology. It was also designed to improve the pedagogical methods of delivering distance education. And to allow people to make proper choices about the various media that support distance teaching and their respective learning environments. All of the work was performed within the framework of an enabling educational policy. In short the project examined teaching and learning approaches, media and tools, and the national distance-education policy definitions as well. Revisions were then put into effect when refinement became necessary to maximize learning outcomes.

A point of concern however that is currently being addressed is the need to develop a suitable pool of students who are able to pay for the courses. This is of course a significant dilemma, as the cost for the activities necessary to provide such educational services must be maintained. This concern addressed at the outset of the project has now come to the fore as the experimental and pilot phases of the program have demonstrated that distance education is a viable approach to improve the skills of Mongolia's student population. At present specific members of Mongolia's business community are aware of some of the issues involved. But pragmatic well-defined solutions to this problem are very much in demand. Of particular concern is the need to deal with this issue from a progressive stance so students from a variety of social strata will be able to benefit from the developments in distance education. We are also concerned that as approximately one half of Mongolia's population is from the countryside, that people from both rural and urban settings have equal access to distance education. Additional strategic planning is necessary in this area.

Another matter that is relatively minor that was first stated in the proposal for this project was the need to develop a shared server. As course materials have been developed by interdisciplinary teams composed of teachers, subject matter specialists including the designers of courses, and supported ICT specialists, a common site to access such information is highly desirable. It must also be mentioned there are a range of intellectual property and copyright issues that have yet to be fully addressed. Members of the Projects Steering Committee composed of representatives from the Ministry of Science, Technology, Education and Culture, the Educational Development School, the Soros Foundation and UNESCO in Mongolia are eligible to address this issue as some progress has been made.

It must also be noted that traditional concepts about the nature of hierarchical relationships in the workplace required some modification during this project. This issue was especially apparent in the relationships between the people responsible for the delivery of services and their consultants. It should be acknowledged that the personnel for this project have a wide variety of expertise in a number of subject areas. And because of this diversity a multidisciplinary approach became necessary as each member of the group became socialized into a system where the overall objectives of the project became the greatest concern to all of the parties concerned. At the outset our varied backgrounds required each of us to learn about unfamiliar areas of the program,

as it was important to learn about the various parts of the project as a whole. But in the end our diversity and willingness to learn about new areas of development allowed us to fulfill our various obligations with even greater skill. Our diversity then became an advantage rather than a disadvantage.

To clarify this issue it must be understood that as this project involved uncharted territory, the need for advice was felt on almost a daily basis. Consultants were contacted through a wide range of methods and advice was tendered on an ongoing rather than limited basis. Special thanks should be offered to the University of British Columbia's consultant Prof. Mark Bullen. Prof. Bullen's experience with on-line education in a joint venture between the University of British Columbia and at the Virtual University at the Monterrey Technical Institute in Mexico was invaluable. He undoubtedly was a central figure in the programs substantial success.

We should also add that we are proud to reveal that almost every step of development and implementation of the project involved the projects' beneficiaries and consumers who also served as program consultants. The need to pay very careful attention to the needs of our service population may not be overstated. We are also happy to report that distance education often incorporates the "guide by the side" approach rather than the "sage on stage" style of interaction. Anecdotal experience has shown Mongolian students greatly benefit from group learning approaches in a friendly, comfortable environment. We have striven to create such an atmosphere throughout the entire scope of the project.

It is also gratifying to report that significant effort was expended in creating program methodologies that are suitable for the development of women in Mongolia. It is quite apparent that women make-up a major portion of Mongolia's consumers of adult education. It is hoped that the continual development of skill and knowledge will offset any structural forms of discrimination that place women in a disadvantaged position within the society. It is our goal to develop a society whereby material benefits are accorded on the basis of merit rather than membership in communities of privilege.

Project Outputs and Dissemination

As previously indicated the project outputs for this program included curricula, courseware, reports, professional skill development, application software, learning resources and web-site content to help Mongolian organizations to acquire new knowledge and know-how to shape their distance education system. Specific projects included the training of Mongolian educators in new distance education methodologies and technologies. Prototype curricula and instructional materials for web based training in four subjects (English, basic computing, gender issues and legal rights). Guidelines for preparing, organizing and delivering web based training for Mongolian institutions. A set of manuals for web-based instructional methodologies was written. An operational interactive learning software package for English pronunciation based on the EVE prototype was created. A depository of selected resources on distance education relevant to Mongolia is now available. A website for sharing knowledge with other IDRC supported initiatives in other countries is currently on-line. A report of the

Mongolian experience with new technology assisted distance education and recommendations for further development of technology supported distance education in Mongolia is available to the public. And contributions towards MOSTEC's vision and strategic plan for technology-based distance education in the country have had a positive impact. And as a small side note it should be indicated that a nationwide on-line competition in mathematics was conducted in April 2002. This competition included a team from Khukh city, Inner Mongolia, China. For children who were unable to connect to the inter-net a CD was given free of charge to enable the children to participate in the competition

While the scope of most of these outputs have been described in some detail in previous sections, relatively little information has been provided about the degree of training made available to the individuals responsible for the delivery of these services during this project. Soon after the onset of this project, for example, work was started for the preparation of a one-week seminar on Web-based methodologies and technologies. Personnel from each of the key organizations attended. These people included teachers, subject matter experts and information technology personnel from ESPI, the Mongolian Women's NGO Coalition, Soros Foundations' Civic Group, and InfoCon. In addition representatives from the Ministry of Science, Technology and Education (MOSTEC) and key donor agencies in Ulaanbataar such as the Soros Foundation, UNESCO and UNDP sent representatives to the seminar. The seminar consisted of explanations about state of the art web based instruction and their implications for teachers, learners, and educational planners with topics focusing on pedagogical techniques and technological issues related to transformation from traditional face-to-face teaching and learning to instruction using web-based and electronic forms for distance learning. Other seminars focused on EVE and DET policy issues.

The dissemination of knowledge during staff training was quite comprehensive as well. For example, a highly skilled teacher with a pedagogical background familiar with basic web development techniques was sent to the Distance Education and Technology Department for Continuing Studies at the University of British Columbia. The instruction involved the basics of instructional course design. The training consisted of both face-to-face hands on practical work as well as guided independent study.

An internet engineer familiar with Macromedia Flash, Cold Fusion and MS Access/SQL received training for one week in Singapore on the techniques of developing EVE. The engineer was trained at the Pan-Asia Research, Experimentation and Training Laboratory. The training was supplemented with instruction from Prof. Tony Hung who provided guidelines for linguistic specifications and animation.

Upon completion of this training the two staff members conducted technical workshops to disseminate knowledge to their colleagues for the development of instructional courses and the utilization of EVE. Project staff also conducted workshops to cultivate awareness and to keep the Ministry of Science, Technology and Education, key institutions and members of the public informed of the project plans and progress. User training workshops were also conducted in remote aimag (township) level Centers of Education and Culture. These centers are responsible for the technical support of

provincial distance education students.

It should however be noted that additional materials, training, seminars, workshops and theses could be developed on the significance of the social, political and cultural characteristics of the social environment in Mongolia that have impinged upon this process. Again it must be mentioned that Mongolia has experienced dramatic social change in recent years. This has undoubtedly affected the flow of information that has increased significantly. A detailed scientific study of the implications of such change is certainly in order.

Capacity Building

In retrospect this program with all of its challenges accomplished its basic aims. A core group of institutions developed the means to deliver internet based distance education services to a population of students from a remote region of the world eager to upgrade their skills, take advantage of new opportunities, and expand their horizons. From a human development perspective the significance of such a program should not be underestimated.

It is now apparent that because of this project each of the participating organizations became stronger. Key members of each organization have learned new skills. But perhaps more importantly each person involved has developed an increased capacity to build upon what has already been learned. These skills have been imparted to others. And new skills will be passed onto successive workers with new variations for development in the future.

It must however be acknowledged that these results as impressive as they are, were achieved on only a relatively small scale. Certainly this is what the IDRC had intended at the outset. The scale of such modest achievements however should not discourage us. It should encourage us to begin to look at the implication of such accomplishments on a much larger scale.

But at the same time while the effectiveness of inter-net based education for developing the capacity of Mongolia's eager learners has been demonstrated in this project. It is still true that the price of inter-net education may be cost prohibitive. Yes it is true that the nations' capital city, Ulaanbaatar, is sprinkled with comfortable, reasonably equipped inter-net cafes. But the cost of one hour of inter-net service is usually around 800 tg. And while this may be affordable for the city's upper crust of students, it surely is unfortunate that many of Mongolia's young people may often be forced to choose between an hour of inter-net service and an evening meal.

While we offer this graphic description of the situation in Mongolia with a bit of hesitation and some personal restraint, so as to minimize the risk of any personal offence, we should not allow these cold realities to discourage us. The effectiveness of internet based education programs should serve as inspiration rather than as an excuse to lessen our expectations for the future. It is now necessary for members of our community to work toward innovative solutions to make sure that the appropriate

infrastructure is secure so further development can occur. It is also absolutely necessary that the benefits of such development will be made available to more people. Obviously this is quite a challenge. But effective dissemination of information can play a vital role in meeting these challenges. The general public, key people within the society, and members of the international community should be more fully informed about the relationship between information technology, educational attainment and economic growth. This relationship certainly warrants further scientific investigation, and perhaps more importantly, a lasting concerted effort to disseminate the significance of the results. Surely Mongolia's community of dynamic young learners would be fine candidates for further research on the benefits of utilizing internet based distance education programs in developing countries. It is time that all of this information be passed further along the grapevine.

Mongolia's public and private sector, elected officials, legislators, and local entrepreneurs should receive proper information so that innovative, effective plans will be made for the development of infrastructure to increase inter-net access. It should also be acknowledged that investment in Mongolia's inter-net technology base is necessary to insure that profits will be made further down the road. A failure to keep pace with current technological developments will certainly have a negative effect upon individual members of society and for society as a whole. It may even have an impact on our ability to meet our basic needs.

Project Management

It must be noted that each of the members of the research team have extensive experience in delivering educational services at the grass roots level. None of them at the present time however are social scientists. And as a result consultation was necessary from the appointed personnel at the various Universities, particularly Prof. Mark Bullen at British Columbia University. In hindsight additional consultation would have been helpful for the collection of data more suitable for publication in scientific journals.

Qualitative analysis revealed that the outcomes were in fact impressive. But additional assistance with the research design would have provided even greater credibility when disseminating the results of the study. Additional assistance within the realm of statistical analysis and the specification of research criteria would have contributed to a project that had already been deemed successful.

It must also be noted that research personnel were effective in bringing together a diverse group of people with Ulaaanbataar and vicinity, who had relatively limited experience in scientific and academic research. For this they should be commended. As an initial project it was quite a task. They have however benefited greatly from the experience and are now confident of future success in similar activities in the future.

Impact

For people who have not been to Mongolia it may indeed be difficult to conjure

accurate images of life within this vast nation. Despite some negative stereotypes that may exist in some parts of Asia and other parts of the western world as well, Mongolia has a rich tradition of learning. Pride in Mongolia's culture and traditions continue to be a very part of the social fabric of the nation. But as Mongolia is situated between Russia and China the collective aspirations of the societies' citizens have been suppressed during various phases of its long history.

For more than a decade however renewed optimism has been felt as the Mongolian people have experienced greater control of their own personal destinies. This no doubt has been a product of Mongolia's burgeoning democratic movement. Significant numbers of Mongolian people have made substantial sacrifices to facilitate positive change within this important area of human development. And key members of the international community have been very helpful too.

The following information about Mongolia's history and culture has been provided because it is believed that it is necessary to consider the nations contemporary social conditions when implementing innovative educational programs. To describe the relationship between these conditions and the inter-net based distance education project we have used the terms "reach" and "impact" to describe the benefits of this recent endeavor. These terms yield themselves to an analysis of the project that considers both its applied nature that may be easily quantified in measurable terms, and the impending implications that may be less obvious, more difficult to define, and difficult to measure.

As reach refers to the reception and use of knowledge produced it becomes quite clear that this project achieved what was intended. The program participants had increased access to the inter-net during their involvement with the project. And as the program participants participated in a project with a highly structured pragmatic curriculum, the outcomes and comments were duly recorded and reported throughout this project.

The program clearly achieved what was intended. The reception to the disseminated knowledge was highly favorable. And the applied usage of the knowledge was demonstrated.

And as we reflect upon the collaboration of the personnel from the various organizations involved, it is also quite apparent that the participants were receptive to the knowledge that was disseminated and this in turn had significant had a significant affect upon the development of the project. For example if we consider the interaction of personnel from the Coalition of Women's NGO's we find that the teachers, activists, feminists, and social workers were able to share their perspectives on gender with a group of talented engineers from Infocon Co., Ltd and Datacom Co, Ltd. As the overall objectives of both groups were linked, each group was then able to more fully appreciate the skills and objectives of their respective counterparts. For the technical groups for example they surely developed greater insight about gender and its impact upon society. And for personnel from the Coalition of Women's NGO's, who may have had less experience with recent technological developments, an increased awareness of the relationship between technology equal rights for women became more fully realized. In each case the knowledge base of both groups was increased. And each case

the impact of this knowledge could have been analyzed quantitatively.

It is however arguable that the programs impact could even be greater. Mongolia's is a nation of approximately 2.5 million people. Nearly half of the population lives in Ulaanbaatar the nation's capital. With the exception of Erdenet, a smaller city, almost one half of the nations' people live in very rural conditions in the vast countryside.

Despite the fact that Mongolia may be classified as a developing country with very formidable challenges that must be met to continue its current rate of economic development, Mongolia's urban people have become increasingly cosmopolitan. The Internet has been embraced with great vigor. And as a result the nation's youth are rapidly increasing their knowledge base.

Projects to promote information technology are vital as many of the nation's educational institutions have been lacking in material resources. Access to the Internet, along with a tremendous increase in televised news from foreign countries has greatly accelerated the nation's learning curve on a variety of social issues. Anecdotal experience indicates that this dramatic increase in information has had a positive affect upon the development of independent learning skills that are necessary to compete in an economy that is becoming increasingly complex.

And while it is true that learning opportunities for the nations rural residents may be limited as compared to the residents of the nations capital there is ample reason to believe that the nations rural people expect further development as well. This research project has demonstrated that Internet Based Education is a very important tool for developing the nation's dynamic learners. This project has indicated that this trend should continue. It is, as a result, very important that the nations' leadership develop effective plans to insure that further development will occur.

Overall Assessment

There is no question that this project contributed to the range of knowledge among the program participants and the personnel responsible for implementing the course curriculum. The program demonstrated that Internet Based Education is a viable method for skill development for a variety of tasks. The program also established that Mongolians are receptive to this method of instruction.

Clearly the investment of time, effort and funding produced significant development among the various parties involved. If there is however an area that could be improved upon it involves disseminating information about the significance of the project after it was completed. The vast majority of the personnel for the project were selected for their ability to deliver service at the grass-roots level. As a general rule the publication of research is certainly not their current field of expertise.

So consequently it is arguable that if there were any deficits in the implementation of the project at all, publication and dissemination of the research results is an area that may require further consideration. This however is an area of concern, as we believe

that the project was quite successful. And we believe that the positive impact of distance on Mongolia's learners may be quite profound. It would be very helpful if more sophisticated means of measurement could be introduced by a group of social scientists to more accurately measure this phenomenon.

It is very possible that such research could have significant implications for other developing countries. We however believe that an important factor in the success of this project in Mongolia was the degree of receptiveness among Mongolia's local population. To analyze the appropriateness of such a program in other developing countries it may be necessary to define and measure the factors associated with the degree of receptiveness to respond to such a method of education.

Recommendations

In conclusion we would like to express our great appreciation to the IDRC for the funding of this project. We understand that funding for such projects is limited. We also understand that the administrators of the IDRC may have to make difficult choices about the allotment of funds.

We do however believe that further assistance would be helpful to engage in further scientific analysis of the relationship between information technology, educational attainment and economic development. Such a study could have an impact upon how monies are spent to assist economic development in developing countries. It is our opinion that the allotment of such funding greatly empowers a motivated population of learners. And in the long run the sponsorship of such programs may have broad economic implications.

We also recommend further inquiry upon the extent to which participation in such programs may have an impact upon self-perception, and the ability to engage in creative problem solving to fulfill daily tasks. Again it is our perception that participants in such educational programs are more likely to become very productive members of the society. And that such activity has far reaching implications for the local economy and overall quality of life.