ABSTRACT: Distance Learning is not a replacement or a substitute for traditional learning environments, rather an adjunct offering significant geographical, pedagogical, and institutional "bridging" opportunities for strengthening individual as well as institutional capacity in sustainable and integrated water resource management. This paper draws on the experience of the CEDAR-RHUL / GEF-IW:LEARN International Waters Distance MSc pilot to illustrate a spectrum of "bridging" benefits to both learners and to educational institutions afforded by distance learning. It then examines the formation of university consortia as a promising new trend in sustainable water resource education and training, and explores the significance to individual and institutional capacity of some economic and educational value-adding aspects of distance learning.

INTRODUCTION

Distance Learning is not a replacement or a substitute for traditional learning environments; rather an adjunct offering significant geographical, pedagogical, and institutional "bridging" opportunities for strengthening individual as well as institutional capacity in sustainable development and integrated water resource management.

INTERNATIONAL WATERS DISTANCE MSC EXPERIMENT

In 1998 IW:LEARN (International Waters Learning Exchange and Resource Network) partnered with the Centre for Developing Areas Research at Royal Holloway, University of London (CEDAR-RHUL) to develop an experimental Internet-mediated Master of Science degree programme to provide needs-based specialized training for environmental managers in developing and transitional areas through distance learning.

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Lessons learned from the experience of the CEDAR-RHUL / GEF-IW:LEARN International Waters Distance MSc pilot illustrate a spectrum of "bridging" benefits, to both learners and to educational institutions, afforded by distance learning.

**Background:** In the mid-90s UNDP identified individual and institutional capacity-building as a top priority within dozens of countries cooperating to develop transboundary environmental regimes across Asia, Africa, Latin America, Eastern Europe, the Middle East, and in Small Island States. The exponential growth of Internet penetration around the world has created a new means to increase access to specialized high-level education within these regions. In partnership with CEDAR-RHUL, IW:LEARN – in 1998 an experimental virtual knowledge-sharing initiative of UNDP-GEF – jointly developed, with financial support from the World Bank infoDev programme, a distance MSc programme designed to address the capacity-building need for broad-based in-depth environmental sustainability training tailored to and designed for the next generation of environmental managers in developing areas.

**NGO/Academic Partnership:** Royal Holloway is one of the University of London’s largest colleges, and ranks in the top 10 UK universities. CEDAR’s Geography of Third World Development MSc degree course was identified by IW:LEARN as a leading sustainable development programme which, delivered in a partially Internet-mediated mode, could potentially model a new means for students in developing and transitional countries to pursue Masters level specialized degree training. New curricula was developed to address the emerging issues and needs of transboundary environmental regimes – especially in the management and protection of integrated land and water resources – and to emphasize the growing role of ICT (information and communications technologies) at the environment and development nexus.

**Distance Learning as an ICT bridge:** A first cohort of students was recruited from GEF International Waters projects including the East Asia seas, Mediterranean, Red Sea & Gulf of Aden, Black Sea, Tumen River Basin, Danube River Basin, and East African Lakes regions. These students were to varying degrees supported academically and financially by their sponsoring GEF projects, with the understanding that their participation was an experiment to ascertain whether ICT-based distance learning could be demonstrated to be technically feasible, relevant and needs-oriented, affordable, and achieve learning outcomes at a high academic standard. IW:LEARN partnered with CEDAR-RHUL to formulate, test-deliver, and evaluate the viability of Internet-mediated distance learning as a means to increase the access of students in developing areas to Master’s level training. The distance MSc pilot set out to test the hypotheses summarised in these three questions:

- Can students achieve as good, or better, learning outcomes through distance learning, as opposed to a traditional residential programme?
- Can students gain high-level specialised training via distance learning at a lower cost than via a traditional venue?
- Is distance learning a more economical means of teaching?

**Success:** The 2-year IW:LEARN/CEDAR pilot completed in 2000 successfully pioneered Masters level distance learning as a viable and dynamic alternative for students in developing and transitional regions. Building on the successes of the pilot, including demonstrated benefits of an Internet-mediated programme to students from a broad spectrum of experience, educational
backgrounds and locations, CEDAR-RHUL launched in fall 2001 an improved sustainable development Distance MSc degree, with a focus on International Waters issues, as a new programme.

**Building diversity bridges:** Tracking analysis by IW:LEARN revealed that ‘virtual marketing’ generated a 173% increase in serious MSc applicant queries, and in a 3-month recruitment period from April through June 2001, over 40 queries representing 30 nationalities were received by CEDAR. Students from around the world were attracted by the prospect of interacting with an international body of student peers while working from home. By the same token, one of the ways in which the distance program was perceived to add significant value to the learning experience offered by the distance MSc was in increasing the potential for cross-fertilization of experiences and backgrounds among a more diverse student body.

**Individual and institutional capacity bridges:** Greater representation of students from developing areas contributes to both enrichment for all students in the greater relevance and breadth of perspective brought to seminar discussions, and ultimately enhances the value of expected applications of the education and training offered by the institution in building capacity. Raising the capacity of individuals returning to homes and careers in developing and transitional economy countries also contributes to building the capacity of the institutions to which they dedicate their energy and talents over a lifetime.

**Bridging the educational opportunity gap:** The pilot program set about to test the hypothesis that distance learning could offer an alternative means of attaining specialized education, thereby enabling greater numbers of aspirant students in developing countries to achieve their educational needs and dreams. The number of applicants from one region relative to others can also serve as a rough yardstick of comparative capacity-building need. An approximate correlation of the development index of countries in the major regions of the planet with the geographic distribution of queries revealed that marketing efforts successfully reached the areas of greatest need: Africa ~ 37%; Pacific Island states ~ 20%; Eastern Europe & Europe ~ 10% respectively; Asia & Middle East ~ 7% each, and Latin America & North America ~4% each.

**Bridging economies of scale:** One of the ironies of offering development studies educational programs to developing country students at an institution located in a western industrialized country is that the economies of scale place so-called ‘overseas’ students at a marked economic disadvantage. Not only is the purchasing power imparity of a developing country students’ currency exchange rate generally poised to impoverish this student faster than his or her peers paying their way in a stronger currency, but opportunities for financial aid for developing country students are few and thus highly competitive, and often difficult to find out about from the students’ home countries. The kinds of fundraising, planning, and budgeting assistance available in countries of the North are also largely non-existent for students in the South.

As this need became apparent in the MSc pilot recruitment process, IW:LEARN conducted an infoDev-supported pilot study on diversification in student financing packages, and subsequently developed an individualized student-financing worksheet tool based on this research. The financing package-building tool was refined for applicants’ use and substantial funds were raised by CEDAR-RHUL students towards MSc costs using this simple planning tool.

IW:LEARN has made “9 Steps to Distance-Learning Cost-Management Success!” available online as a public resource at www.iwlearn.net). This a step-by-step system and worksheet for
building customized student financing packages can be tailored as a tool which guides students in leveraging incremental financing to reach their immediate educational and training goals.

**Opportunity cost:** while lack of access to subsidies and other forms of financial aid might be seen to offset the lower tuition costs of some distance learning programs (while the CEDAR pilot experimented with reduced fees for distance students while business schools took the lead in charging higher fees for distance learning programs, in the end RHUL found the relative costs to deliver distance learning to be equal to if not higher than for residential students) opportunity cost savings are the magic formula which makes distance learning more affordable to economically disadvantaged students. The ability to structure studies in flexible time enabling them to maintain a source of income by working, not to have to forego income for a period of time by taking a leave of absence or losing job security by leaving a job to pursue studies, job security as incentive for employee loyalty when linked with employers’ willingness to invest in employee capacity-building through employer support and sponsorship, and the ability (actually a requirement of the CEDAR programme) to tailor dissertation research to make a substantive contribution to the sustainable development of the student’s native region, or the goals and objectives of the institution or organization where the student is employed – these are the significant opportunity cost savings and investments distance learning students are able to bank, and are the true measure of the means whereby distance learning can bridge the costs of education and training.

**Sustainable development – a growth market for educational institutions:** Whereas the profile of applicants to the residential development studies degree program from which the International Waters program was adapted included a mix of educational and work experience and students from developing countries as well as the UK and EU, the consistently high calibre of response to the new distance MSc exceeded expectations; the majority of applicants are mature, highly motivated junior level working environmental professionals. This indicated that in defining the market for specialized international waters – or more broadly “sustainable development” career training, and targeting this market in recruitment efforts, a potentially robust new revenue stream can be opened for the educational institution, while addressing a significant need in developing countries and countries with economies in transition.

**Sustainable financing of education from the delivery side:** It should be noted that the pilot program was met with a high degree of skepticism by the college administration of the day as to the potential for attracting even enough students to break even in terms of the costs to the institution of offering the program. Two years later the same administrators were admonishing adaptation of the program to dramatically increase student:tutor ratios to better capitalize on this newly discovered and largely untapped market. American universities took the lead in opening the distance learning market, generally at enormous expense to ensure reliable operation of expensive and technically sophisticated delivery platforms. The prevailing formula for financial success with distance learning as a way to add new revenue streams lies in the ability to vastly increase student numbers – and consequent fee income – without incurring the costs of expanding physical facilities such as classrooms, residence halls, laboratories and libraries. The trade-off with which we found ourselves faced was that because the hallmark of CEDAR’s MSc programme is the research dissertation, the number of advisees per instructor in the programme became the limiting factor as to how large a cohort of students could be admitted. Whilst the college administration was loathe to sacrifice potentially robust revenues from exponentially larger numbers of distance students, the teaching staff was equally loathe to sacrifice the very real benefits of students becoming competent to conduct and evaluate independent research, and
were convinced that this indeed was important to maintaining the competitiveness of the program in a market which had grown from few residential programmes in this thematic area and no distance learning competitors during the pilot phase to a variety of new and proposed programs on all continents within a few short years. Among the most established are the groundwater training offered by the Universidad Technica Catalan which is exploring distance learning bridges to serve the Latin American market, and among the latest in the water resources specialty is a new geography MSc in global waters to be launched by Oxford University in 2004.

University Consortia ~ the Next Wave in Distance Learning

A groundswell in the formation of university consortia is a promising new trend in sustainable development and in particular water resource education and training. The number of new and emerging regional and thematically-linked consortia of educational institutions suggests significant potential for expanding the depth and scope of educational outreach, diversification within disciplines, opportunities for interdisciplinary and inter-institutional collaboration in teaching, research and applied research, and highlights prospects for some proven economic and educational value-adding aspects of distance learning to enhance individual and institutional capacity building in eastern and central Europe and the global South. A few examples suffice to illustrate.

The European Union-supported Socrates-Erasmus program has forged bridges between European Union, Central and Eastern European universities. While the transactions costs of residential student exchanges have been identified as a constraint, there is interest in promoting teacher exchanges, joint development of study programmes, and strengthening of thematic networks between European departments and faculties. One of the most audacious yet little-touted achievements of the Erasmus initiative is having pioneered a European credit transfer system.

Similar regional consortia are emerging in the Latin America and Caribbean region, and in South East Asia. At a meeting organized at Chulalongkorn University in Bangkok in December 2002, it was proposed that an Internet-based regional network on university marine science curricula would provide a “powerful tool for capacity building in the region” with the use of distance learning “as a means to enhance educational opportunities in marine science and marine environment.”

Under the auspices of CATHALAC, the Water Centre for the Humid Tropics of Latin America and the Caribbean, a constitutive workshop in May 2003 produced a Declaration of the Academic Consortium for Integrated Water Resources Management and the Environment drafted by representatives of about 15 universities and organizations. This founding agreement includes a mandate for CATHALAC to develop “Distance Education Master’s Degree Programs in Integrated Water Resources Management and Climate Change and Sustainable Human Development.”

The University Partnership for Transboundary Waters is an audacious initiative launched by Aaron Wolf and Oregon State University’s Department of Geosciences, linking pairs of institutions on each continent – a geography department and a hydrological institute – in an emerald necklace of 10 institutions committed to collaborate with each other in a triad of focal activities. The Education and Training program is dedicated to engendering a new generation of ‘transboundary waters champions” with “management skills embracing equity, sustainability and
consensus.” The Outreach and Information Resources program includes a comprehensive “hydropolicy” database, promotion of professional and watershed networks, and the development of interactive and decision support tools for formal and non-formal education and policymakers. A Coordinated Applied Research component undertakes to advance research services and development in areas including “institutions, conflict prevention and resolution, resource allocation, multi-scalar dynamics, and governance.” The partnership is very interested in exploring the potential for distance learning as a way to make a global education possible, so that students at any of the member institutions could draw on the relative strengths and expertise of the geographically distributed member institutions’ teaching resources.

Only launched a year or so ago, the UNDP-supported Cap-Net initiative is already a dynamic global network of networks, linking and supporting the strengthening of regional networks of capacity-building institutions with a tacit “think globally, act locally” modus operandi. This “International Network for Capacity Building in Integrated Water Resources Management” does not promote distance learning per se, but utilizes ICT tools precisely as such: tools to facilitate the work of the networks and the flow of communication, information and knowledge that capacity building is all about.

CONCLUSIONS

These various types of established and emerging partnerships and consortia bridge the geographies of development through North/South alliances and South/South alliances in new ways – offering tremendous potential to strengthen networks of institutions of education and training that are also pioneering yet new means of adapting ICT tools and distance learning systems and approaches. These new alliances of institutions and networks link the past, present and future with unity in diversity, and fundamentally bridge the twin poles of human endeavor: to better associate with one another, and to do so in harmony with the life support system we term the environment.