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Multisectoral partnerships in e-learning A potential force for improved human capital development in the Asia Pacific

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Abstract

Since their inception, a dominant characteristic of higher education institutions has been their reliance on the advantages conferred by geographic and political boundaries. However, emerging technologies and growing consumer power are challenging the status quo. The application of Internet-based information and communication technologies in education—e-learning—is now making it possible for education to transcend space, time, and political boundaries. In e-learning, content and mode of delivery are increasingly defined by external groups: students as well as employers. The emergence of e-learning is weakening the dominance of traditional providers of higher and continuing education—nonprofit colleges and universities—and they are being challenged by a proliferation of alternative institutions and providers with the skills and attitudes required to succeed in the new educational marketplace. Partnerships will allow traditional suppliers and intermediaries to contribute from their respective comparative advantages. In a common emerging model, traditional universities provide the intellectual capital, content, and content support; evaluate student performance; and award appropriate degree credit or certification. Intermediaries contribute in such areas as hardware and software provision, instructional design for the Web, website and communication for maintenance, record keeping, teacher training, and technical support for courseware development and marketing. Although this trend is not yet well advanced in the Asia Pacific Region, there are already a few pioneers, and interest is strong and growing among the major stakeholder groups—traditional academic institutions, traditional students, emerging intermediaries, professionals with a need for continuing education, and private sector corporations with the need to provide educational opportunities for their workforce. The

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Asia Pacific Regional Technology Centre (APRTC) is an example of an emerging intermediary organization. Its primary focus is on providing continuing educational opportunities for agricultural professionals throughout the Asia Pacific. It relies almost exclusively on e-learning for educational delivery and carries out its work through multisectoral partnerships. Initial experience indicates that the approach works in the region and is cost effective and that all partners and the clients can and do benefit from the collaboration.

Keywords: Online learning; Distance learning; Continuing education; Professional development; Agricultural education; Multisectoral partnerships; APRTC

1. Introduction

> The playing field of higher education has become more and more crowded and muddy. While potentials for this development are obvious, so are many problems and issues. Like it or not, we need to realize that distance learning technologies—primarily the Internet—have changed the way education will be consumed in the future. Like a tidal wave, online learning offerings will be introduced in different formats from different public and private, educational and commercial entities in great speed and quantity, and are not stoppable. (Chen, 2000, p. 1)

Chen's (2000) observations accurately sum up the feelings of a growing number of educators who grasp the immense potential of e-learning for educational purposes and the inherent changes that widespread adoption of its associated tools will catalyze. Many see a future in which the educational landscape will be transformed, not least because new players will gain prominence and traditional providers will increasingly have to compete for their "market share" of client students. A major part of this trend involves the establishment of innovative multisectoral partnerships wherein each collaborator contributes from its own comparative advantage and reaps its own unique rewards.

In the sections below, we highlight some of the current challenges facing higher education in the developing world, make a case for selecting agricultural education as a priority for the Asia Pacific Region, and review the potential of e-learning as a means to address the challenges discussed. The final sections focus on the critical importance of multisectoral e-learning partnerships in education and development. This includes a description of a pioneering partnership initiative in the Asia Pacific Region, spearheaded by the Asia Pacific Regional Technology Centre (APRTC).

2. Higher education in the Asia Pacific

> Today, more than ever before in human history, the wealth—or poverty—of nations depends on the quality of higher education. Those with a larger repertoire of skills and a greater

> capacity for learning can look forward to lifetimes of unprecedented economic fulfillment. But in the coming decades the poorly educated face little better than the dreary prospects of lives of quiet desperation. (Gillis, 1999, p. 15)

The above statement illustrates a concept that is becoming increasingly important for developing countries in the Asia Pacific. The key to growth and national prosperity is intimately linked to and dependent on a country's ability to educate its citizens. The international development community is increasingly concerned about the issues underlying growth and development in the new knowledge economy and the crucial role of higher education. This is evidenced by the recent release of two major studies dealing with this topic—the joint World Bank and UNESCO Taskforce on Higher Education and Society's (2000) *Higher Education in Developing Countries: Peril and Promise* and the United Nations Development Programme's (UNDP, 2001) *Human Development Report 2001*. Together, these reports provide an excellent in-depth analysis of the current situation in higher education around the world. The lessons and conclusions they present provide valuable insights into the problems and potential of this sector.

Among the conclusions of the joint Taskforce on Higher Education and Society (2000, p. 138) was "higher education is the modern world's basic education" and that "higher education is no longer a luxury, it is essential for survival." The reasons behind such statements are related to the universally recognized growing importance of knowledge resources, as opposed to physical or capital resources, in economic development.

These studies point out, however, that higher education in Asia and the rest of the developing world is beset by problems, with many countries falling further and further behind. The Taskforce on Higher Education and Society (2000, p. 10) noted that "higher education systems in developing countries are under great strain. They are chronically underfunded but face escalating demand—approximately half of today's higher education students live in the developing world. Faculty are often underqualified, lack motivation, and are poorly rewarded. Students are poorly taught and curricula underdeveloped."

To make matters even more challenging, both reports noted that even the basic concept of higher education has broadened considerably. It is no longer enough to expect to give tertiary level students all the knowledge and skills they will need in their careers. They call for recognition of the fact that "formal education is only one part of the skill creation system. Vocational and on-the-job training are just as important. When technology is changing, enterprises [including countries] have to invest in worker training to remain competitive" (UNDP, 2001, p. 88). A new challenge of formal education is therefore to "teach students not just what is currently known but also how to keep their knowledge up to date, so that they will be able to refresh their skills as the economic environment changes" (Taskforce on Higher Education and Society, 2000, p. 10). This point was aptly illustrated at a recent meeting of the American Society of Engineering Education where Christopher Galvin, President of Motorola, declared that the company no longer wanted to hire engineers with 4-year degrees. Instead, he said, they needed employees with 40-year degrees (Wilson, 1999). These statements give strong reinforcement to the growing

conviction that the provision of continuing education opportunities is an integral component of higher education.

Both reports, while recognizing and detailing the severe problems, also advanced a range of potential solutions and remedial mechanisms. In addition to improved management and curricula in general, specific recommendations focused on:

- setting clear priorities for investments in higher education,
- embracing the application of information and communication technologies, and
- establishing multisectoral/multistakeholder educational partnerships.

3. Setting priorities — the case for agriculture

> More than 1.3 billion people worldwide live in poverty and nearly three fourth of them live in rural areas. Virtually all of them depend directly or indirectly on agriculture for their livelihoods. Despite the continuing process of urbanisation, about 3.2 billion of today's 6 billion-world population is rural and this number will be about the same in 30 years time. The total population active in agriculture is about 1.3 billion and this number will not change significantly in the next 10 years. (Gasperini, 2000)

A major dilemma facing most developing countries is the cost of implementing the reforms needed. As the UNDP report pointed out, "Tertiary education is expensive—too expensive for many poor countries" (UNDP, 2001, p. 90). Given limited budgets and competing needs, developing countries need to set defendable priorities and make hard decisions about what sectors to invest in. UNDP (2001, p. 90) recommended that public financing should be targeted and the priority fields mentioned include "science, public health, agriculture, and other fields in which technological innovation and adaptation will generate large spillover benefits for society as a whole." Given the importance of agriculture in most developing countries of Asia, illustrated by Gasperini's (2000) statement above, it is difficult to think of a sector more deserving of attention. Agriculture dominates the economies of most developing Asian countries, contributes a significant amount to regional GNP, and provides the bulk of employment opportunities. Advances in agriculture will have a tremendous impact on the prosperity of national economies and the well being of the general populace. It is therefore maintained that a key area for investment in higher and continuing education in the Asia Pacific is agricultural education.

3.1. Agricultural education

> Poor quality training of agricultural professionals, technicians and producers has been identified as part of the global food security problem. Unfortunately, the training of human resources (the development of human capital) in agriculture is often not a high priority in the overall development plans of countries. As a result, curricula and teaching programmes are

> not necessarily relevant to the production needs and employment demands of the agricultural sector. (Lindley, 1998, p. 2)

As Lindley's (1998) remarks so clearly portray, the problems plaguing higher education in general are perhaps even more pronounced in higher agricultural education. Like the reports referred to earlier, the study reviewed by Lindley advanced a number of recommendations, which were in essence very similar to those presented in the Task Force and UNDP reports. It too highlighted the critical importance of educational reform, including the critical need to attract more students into this area. The authors of the report felt that this could be done by making "curricular revisions focused on problem solving and on sets of skills (e.g., computer or communication proficiencies) that are transferable in a diverse employment sector" (Lindley, 1998, p. 3). The report also recommended the increased application of information and communication technologies in agricultural education as well as the establishment of multisectoral partnerships.

4. Application of ICTs in education—e-learning

> Advances in communications have transformed society before: movable type, photography and telegraphy, the telephone, television, and the fax machine have all pushed outward the limits of our ability to store and transmit knowledge. Now the convergence of computing and telecommunications appears ready to shatter those limits, making it possible to send vast amounts of information anywhere in the world in seconds—at an ever-decreasing cost. This new technology greatly facilitates the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formation and execution, and widen the range of opportunities for business and the poor. (World Bank, 1999, p. 9)

There is almost universal recognition that new advances in information and communication technologies have a tremendous potential to address some of the fundamental challenges facing higher education. Perhaps more than any other factor, rapid advances in information and communication technologies offer educational organizations the tools needed to respond to today's realities and tomorrow's challenges. They promise to play a huge role in the formal training and continuing education of agricultural professionals and other graduates. They are ideally suited to the rapid dissemination of knowledge from any place in the world to almost any place else and allow collaboration and discussion over vast spatial and temporal distances (Raab, Ellis, & Abdon, 2001).

Perhaps the most exciting manifestation of the application of these technologies for education is the emerging field of e-learning. E-learning is the most recent evolution of distance learning—a learning situation where instructors and learners are separated by distance, time, or both. E-learning (sometimes also defined as "Internet-enabled learning") uses network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. "E-learning is characterized by speed, technological transformation, and mediated human interactions" (Stokes, 2000).

Capper (2001) lists the benefits to learning online that are unique to the medium:

- *Any time:* A participant can access the learning program at any time that is convenient—not just during the specific 1–3-hour period that is set for a conventional course. The episodes can be quick snatches at odd times or long late-night sessions. Cross-time zone communication, difficult to arrange in real time, is as easy as talking to someone across town when using the Internet.
- *Any place:* The participants do not have to meet. That means they can be anywhere. International sharing is feasible. Individuals can log on at work, home, the library, in a community learning center, or from their hotel when traveling.
- *Asynchronous interaction:* Unlike face-to-face or telephone conversations, electronic mail does not require participants to respond immediately. As a result, interactions can be more succinct and to-the-point, discussion can stay more on-track, and people can get a chance to craft their responses. This can lead to more thoughtful and creative conversations.
- *Group collaboration:* Electronic messaging creates new opportunities for groups to work together by creating shared electronic conversations that can be thoughtful and more permanent than voice conversations. Sometimes aided by online moderators, these net seminars can be powerful for learning and problem solving.
- *New educational approaches:* Many new options and learning strategies become economically feasible through online courses. For instance, the technology makes it feasible to utilize faculty anywhere in the world and to put together faculty teams that include master teachers, researchers, scientists, and experienced professional developers. Online courses also can provide unique opportunities for teachers to share innovations in their own work with the immediate support of electronic groups and expert faculty.

In response to these technological developments, e-learning is growing at an astonishing rate. Moe and Blodget (2000) reported that "among all higher-education institutions offering any distance learning, the percentage of institutions using asynchronous Internet-based technologies nearly tripled, from 22% in 1995 to 60% in 1997–1998," and "as of the 1999–2000 academic year, 34% of two- and four-year colleges offered accredited degree programs via computer, up from 15% the year before. As of 2000, U.S. institutions reportedly offered more than 6000 accredited courses on the Web, and by 2002, over 2 million students will be enrolled, a tripling of the 1998 enrollment."

Advantages of this approach for developing countries are clear: "e-learning matches the needs of nontraditional students, increases the educational facilities available to traditional students, provides companies with cost efficient yet effective training options, and gives students and researchers in developing nations an invaluable means of gaining a first-world education tempered by third-world experience" (Anonymous, 2001).

Unfortunately, developing countries are lagging far behind in this area. Although there is growing interest and "many universities in developing countries are testing or implementing Web-based education systems" (UNDP, 2001, p. 87), a major factor limiting more

widespread adoption and application of this approach is cost and lack of access to information, training, infrastructure, and resources. Many developing country educational institutions have limited opportunities to learn about e-learning and apply associated technological tools. Multisectoral partnerships offer a cost effective and efficient way to address these constraints.

5. Multisectoral partnerships

> Realizing the promise of e-learning will require forging new kinds of public and private partnerships. In recent years, educators and business leaders have worked more closely together than ever before, and much work remains to be done that will have to be accomplished in partnership. (Stokes, 2000)

There is widespread consensus of opinion about the growing role of multisectoral partnerships in education in general and in e-learning in particular. As Twigg and Oblinger (1996) noted, "an immense opportunity exists for institutions to establish new forms of electronic-based collaboration—from the student level to the institutional level—that can bring about major improvements in both access and learning while meeting legitimate public and institutional concerns about cost and quality. There is also an opportunity for new levels of multi-institutional, multistate, and multinational collaboration to provide postsecondary education and training through existing and emerging global networks. Collaborating institutions can deliver modules, courses, and degrees to individuals and groups of learners who interact with faculty and with organized learning materials in both real-time and delayed-time (asynchronous) modes."

There is a host of reasons driving the move to partnerships. Some of the most compelling include the growing power of the educational "consumer," the prohibitively high initial investment required and evolving societal needs.

5.1. Growing consumer power

> New developments in technologies and the explosive growth of networks will continue to erode the geographic hegemony of higher education. Students will be likely to select educational institutions based more on offerings, convenience, and price than on geography. This competition will not be limited to the United States or North America; it will be global. (Twigg & Oblinger, 1996)

A direct result of the widespread application of information and communication technologies for educational purposes is that it is now possible for education to transcend space, time, and political boundaries. No longer can the traditional suppliers of education depend on a "captive" audience. Accompanying this trend is the explosion in demand for advanced and continuing education. Predictions estimate that as the number of Internet users grow ["There will be 320 million Internet users worldwide by the end of 2002, up from 97 million at the

end of 1998'' (Capper, 2001).], ''the online training market is expected to nearly double in size every year, reaching approximately $11.5 billion by 2003'' (Urdan & Weggen, 2000).

Together, these developments have meant that competition for students has increased and students are able to choose from a proliferation of nontraditional educational providers with the skills and attitudes required to succeed in the new educational marketplace. As Baer (1999) noted, ''the ability to offer e-learning broadly across time and distance blurs long-standing distinctions between higher education and postsecondary training, between degree and nondegree programs, and between nonprofit and for-profit providers of instruction. As a consequence, several different kinds of institutions are actively moving into the e-learning field.'' This has meant that e-learning is ''poised to catalyze both competitive and collaborative relationships among for-profit firms and nonprofit colleges and universities.''

5.2. Investment

> Institutional focus seems important, because distance learning in general and E-learning in particular have higher up-front costs than does conventional classroom instruction. Although one can readily find content modules and much course material on the Web, often available for free, the truth is that developing a new Internet-ready course is time consuming and expensive. Simply duplicating existing face-to-face or distance learning course materials is not likely to bring success on the Web. (Baer, 1999)

The up-front investments required to enter into an e-learning initiative are not inconsequential. It involves not only initial and continuing substantial outlays for hardware, software, and connectivity but also for human resources necessary to set it up, keep it functional, and ensure that it remains up to date. To this must be added the expense of training users and developing applications that most efficiently make use of the infrastructure.

Partnerships offer an attractive and cost-effective alternative to an individual institution trying to do it all. Contributing partners can concentrate on and specialize in areas in which they possess a comparative advantage and provide these services to multiple collaborators at attractive rates. Fortunately, e-learning is uniquely suited to allow multiple entities to cooperate in its delivery. This is because e-learning ''encourages the unbundling of different instructional elements: content development, course delivery, testing and evaluation, and administrative functions such as registration, payment, and student record-keeping. Traditionally, each academic institution has provided all these services for every area in which it offers instruction. E-learning makes it easier to separate them, so that an institution can concentrate on the components and substantive fields in which it does best and outsource others'' (Baer, 1999).

5.3. Societal needs

> The case for distance training reflects a combination of fast-paced business practices with the greater knowledge firms require in the people who do the work. The traditional education system simply can't prepare the labor force for the modern world of work; nor can employees

> be kept up to date on changing work workplace requirements through conventional means, whether corporate or academic. (Schaff, 1997, p. 8)

For a country and its citizens to grow and prosper in the new global knowledge economy and reap the benefits of today's rapidly changing technological tools, highly trained, technologically literate workers will be needed in all sectors—not least in agriculture. As Moe (2000) stated, "technology is the driver of the New Economy, and human capital is its fuel. In today's world, not only does knowledge make the difference in how an individual performs but it also makes the difference in how well a company performs and, for that matter, how well a country performs."

However, higher education is routinely criticized for its failure to produce graduates with the skills needed in the workplace. "The links and transition points from initial education to the work force are weakly articulated. This is true in the developed world as well as in the developing world. Educators and business leaders rarely discuss, let alone agree upon, a set of skills and orientations that are prerequisites for successful employment. The formal structures by which education systems prepare students for tomorrow are similarly weakly developed" (Altbach & Davis, 1999). Specifically in terms of agriculture, Lindley (1998, p. 3) suggested that a solution to these problems is "a greater involvement of the private sector and institutional partnerships" and a redirection of agricultural education curricula "to address the labor demands of employers."

In response to the needs mentioned above, the private sector has increasingly turned to providing required training on its own and has invested heavily in corporate universities. "There is a huge boom in corporate universities. In the last 13 years, the number of companies that have opened corporate universities grew from 400 to 1800. Today, 40% of Fortune 500 companies have established corporate universities, and if growth continues at the current rate, the number of corporate universities will exceed the number of traditional universities by the year 2010" (Fulton, 2001).

However, it is maintained that partnerships rather than such individual efforts are the preferred answer, and many organizations are beginning to realize the benefits partnerships can bring. In fact, the corporate university has encouraged higher education and business to rethink their existing relationships. "Some companies are even creating entire degree programs in cooperation with traditional universities, enhancing both their educational opportunities and prestige, both of which also help to retain top employees" (Jones, 2001).

Observers of this trend have recognized the benefits of public and private sector partnerships and the potential synergies and efficiencies they make possible. Also, it is not only the academic and corporate sectors that are coming together. As noted in the Task Force report, the term "private, in particular, requires cautious application. Some private schools are philanthropic entities and are not for profit. Generating surpluses is not the dominant motive of these organizations and in that sense they resemble state schools" (Taskforce on Higher Education and Society, 2000, p. 16). Today's learning and e-learning partnerships include a much wider range of nontraditional educational enterprises. "Partnership and alliances amongst stakeholders—national and institutional policy-makers, teaching and related staff, researchers and students, and administrative and technical personnel in

institutions of higher education, the world of work, and community groups — are a powerful force in managing change. Also, non-governmental organizations are key actors in this process'' (UNESCO, 1998).

In a common emerging e-learning partnership model, traditional universities provide the intellectual capital, content, and content support, evaluate student performance, and award appropriate degree credit or certification. Intermediaries contribute in such areas as hardware and software provision, instructional design for the Web, website and communication for maintenance, record keeping, teacher training, and technical support for courseware development and marketing. Corporations provide financial resources, articulate educational needs, and become major consumers of educational opportunities.

6. Multisectoral partnership in e-learning — an example

The APRTC formed as a result of a realization that something more was needed to promote sustainable agricultural practices in Asia. Farmers in the region are increasingly being challenged to raise levels of production, optimize use of expensive external inputs, compete in a tough global economy, and keep their operations profitable without endangering their fragile resource base. It was realized that innovative agricultural technology options could help address this dilemma but also that the farm technology gap in Asia is vast. Agricultural professionals in multiple sectors — government, nongovernment, development, and the industry itself — were the logical leverage point in attempting to bridge this gap but were not considered to have adequate levels of knowledge and skills to play an effective role. It was realized that an educational program utilizing new information and communication technologies could be a powerful tool to better educate this key target group and make them effective agents of change. As a result of these initial deliberations, private sector funds were raised as seed money to establish the APRTC and its distance learning program with the expectation that it would soon become an independent, impartial, and self-supporting not-for-profit educational institution reaching agricultural professionals throughout the region.

Since its establishment early in 2001, the US-registered nonprofit APRTC has expended a considerable amount of energy developing and delivering online courses related to sustainable agriculture. Courses either ready for delivery or under development include:

- Digital Literacy for Agricultural Professionals,
- English for Agriculture,
- Safe and Effective Use of Crop Protection Products,
- Introduction to Integrated Pest Management (IPM),
- IPM for Cotton,
- IPM for Irrigated Rice, and
- IPM for Vegetables.

In addition to online course development, a major part of APRTC's effort has been to establish multisectoral partnerships. Current official partners now include the NGO World-

View International Foundation, and the industry trade organization the Asia Pacific Crop Protection Association and negotiations have been initiated with a range of leading higher educational institutions both in the Asia Pacific Region and in the West. Pilot collaborative activities involving all these institutions are underway. The Centre is looking to expand its network and is particularly interested in starting dialogues and mutually beneficial collaborative activities with other Asian higher education agricultural institutions.

The keen interest shown by partners in this pioneering effort is a result of their realization of the clear benefits it offers. For example, universities find the materials and specialized knowledge gained through the partnerships useful to their current teaching. Universities also appreciate access to the cost-effective design, hosting, and delivery system provided by the APRTC. The private sector benefits through a better-trained workforce and the availability of quality continuing education for its staff. The NGO partner sees that the partnership offers a unique opportunity to reach a wider constituency with its message and better fulfill its mandate. The APRTC benefits through enhanced credibility for courses and potential accreditation for online students from respected universities. Society benefits through a better-educated farming community in the Asia Pacific Region and more competitive economic enterprises.

7. Summary and conclusions

> The Internet has great power and potential for good, which we must harness to the cause of educational opportunity. We must not let information technology become a new engine of global inequality. (Gladieux, 2000)

It is widely agreed that e-learning has immense potential for educational purposes in both developed and developing countries and that higher and continuing education is a key sector for its application. Perhaps no other sector is more in need of attention and improvement and in which strength is such a fundamental prerequisite for national economic development.

However, higher education and the development of associated e-learning capacity are expensive and must compete with other sectors for scarce financial resources. Hard decisions need to be made about priorities for investment. New innovative partnership arrangements must be developed to help meet the challenges. Particularly, public and private partnerships will result in the most benefits for the widest range of stakeholders. These collaborative arrangements will make education more relevant to societal and development needs and allow partnering institutions to contribute based on their respective comparative advantages. Given the importance of agriculture in the economies of most Asian countries and the significant returns to education in this sector, agriculture is clearly a regional priority for e-learning in higher and continuing education.

The APRTC and the partnerships it is establishing provide a good example and case study of what can be achieved through this approach. It is spearheading a regionwide collaborative network focused on e-learning and sustainable agriculture targeting the higher and continuing educational needs of agricultural professionals. It brings together and coordinates expertise

and other resources from academia, the private sector, and the government and nongovernment development community. Initial experience indicates that the approach works in the region and is cost effective and that all partners and the clients can and do benefit from the collaboration. Interested institutions in the region are cordially invited to learn about and join in the Centre's activities by logging on to http://www.aprtc.org.

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