INTRODUCTION

The world is changing rapidly in all areas in the environment, economy, technology and education. While it is important to spend time thinking about these changes, perhaps it is more important to consider the implications of the changes to education. The education system should be the key platform that enables young people to develop the necessary skills required to prepare for the changing world.

The institutions can now deliver a variety of educational applications due to the developments in information and communication technology. The capacity for information and communications technology has been growing exponentially over the last 10 to 15 years. Computers have become more powerful; satellite, fibre optic and wireless technology has increased transmission capacity; and software developments such as multimedia authoring systems have made it easier to create digital materials such as electronic games, computer simulations and educational materials.

The importance and impact of the internet and in particular the web to everyday life in both developed and developing countries and the increasing use of web based commerce has given rise to an enormous amount of discussion and in some cases action in the area of online education.

Australia has been one of the first countries to adopt the distance education program, due to vast lands and widespread rural living. The importance placed upon education by Australia has played an important roll around the neighbouring countries by providing higher education institutions, on campus, off campus, online and offshore education. Education is now included among Australia’s major industry sectors, and ‘exports’ of education contribute significantly to the economy.

The study, consist of three sections; Section 1, general information about distance education and the operation of distance education in Australia. Section 2, general information about online educations operations, research, development and delivery in Australia. Section 3, the analysis of international online education projects developed by Macquarie University one of the Australian university.

DISTANCE EDUCATION

Distance education, also known as distance learning, is simply learning from a distance, generally from home, or from an appropriate off-campus site. Distance learning allows adults to earn college credits, even entire degrees, without ever leaving home. Distance learning makes use of the Internet, software, modems, microwave, digital phone lines, satellites, TV stations, 2-way television using fibre optics, radio, ham radio, videocassette and audiotape, and normal mail to deliver instruction.

Distance learning also refers to on–campus classes where the professor is not physically present, but communicating with students at several sites simultaneously via television, modem, or some other electronic means. It is part of all degree types, from the A. A (The Associate of Arts degree is a two year degree) to the PhD. (The Doctor of Philosophy
degree is a post-graduate degree), and is an option in most majors, and at hundreds of universities worldwide. A broader definition of Distance learning includes non-credit courses, workshops, seminars, and career credits like CEUs (continuing education credits). Distance learning is for people who want to learn a new skill, or just pick up a few new ideas for the fun of learning. Additionally, it is an exciting and growing part of public and private schools from elementary level through high school in many areas such as maths, science, and languages. Shared courses offered via satellite, fibre optic cable and videocassette connect schools in the same town, or great distances apart. (http://www.faqs.org/faqs/education/distance-ed-faq/part1/)

Open and distance learning will play a central and an important role in the information society where continuous updating of knowledge will be an imperative for sustaining prosperous economics. Most countries have opened at least one open and distance university since 1970.

Identified 11 mega-universities in the world that provide distance education, as follows (with 1997 enrolment figures)(John Daniel, 1998).

- Anadolu University, Turkey, 578,000 enrolment
- China TV University, China, 530,000
- Universitas Terbuka, Indonesia, 533,000
- Indira Gandhi National Open University, India, 242,000
- Sukhothai Thammathirat Open University, Thailand, 217,000
- Korean National Open University, Korea, 211,000
- National Centre for Distance Learning, France, 185,000
- The Open University, Britain, 157,000
- University of South Africa, South Africa, 130,000
- Payame Noor University, Iran 117,000
- National Centre for Distance Learning, Spain, 110,000

While Turkey’s place as the largest enrolment of all distance education institutions in the world is undisputed (Mac Williams, 2000), New institutions continue to be opened in both developed and developing countries.

International and national campaigns such as “education for all” have succeeded in drawing learners into the education system, but the development of distance education opportunities has also had much to do with the growth in numbers. Research conducted by the International Data Corp indicate that “distance learning enrolments are growing by 33 percent and will reach 2.23 million in 2001” (De Veaux, 2000).

DISTANCE EDUCATION IN AUSTRALIA

As one of the most sparsely populated countries in the world, relying on wealth generated from non-urban areas for most of its national income, it seems appropriate that higher distance education should have begun early in Australia’s history.

It follows that Western Australia and Queensland provided a lead. The political nature of distance education was evident in the beginning, when the largely rurally controlled State parliaments responsible for the passing of the statutes to establish the universities made clear their intention that these universities provide professional development opportunities for rural and isolated teachers by ‘correspondence’. Because of this state based control, small numbers of students and poor communications with rural and isolated regions, there was little potential for a national approach to distance education. Out of this beginning has developed the Australian dual-mode system, where a range of higher education institutions- more than 30 at one stage-teach courses in both the on-and off-campus mode as opposed to the dedicated single-mode distance education provider model found in many places around the world. Now, distance and open learning is very
much a feature of the Australian educational landscape. Through the rhetoric of ‘mainstreaming’ distance and open learning, ‘blurring of the boundaries’ between on and off campus teaching and the empowerment of technology, distance and open learning or flexible delivery are becoming a less marginalised area of higher education. (http://cea.curtin.edu.au/staff/allan/idio.html)

International Education in Australian institutions has been dominated by a single paradigm. This paradigm has served Australian institutions well. It has been the basis of a service industry that has grown from a few hundred thousand dollars in export value in 1986 to over 3.7 billion dollars in 2001. It has also been the basis for the development of a view of internationalisation that includes internationalisation of the curriculum, offshore programs, distance and on-line programs, staff and student mobility, and the formation of cooperative links between institutions. These various facets of internationalisation have been largely treated as separate functions within institutions. Onshore recruitment has dominated and often been separated organisationally from student mobility, offshore programs, distance and on-line programs and the development of strong cooperative links. (Adams, T and Walters, D., 2001, p. 41)

ONLINE EDUCATION

According to UNESCO, in 1999 there were approximately 80 million students enrolled in higher education programs worldwide. Of these, it has been estimated that 6.150.000 were studying online. (Walsh M, 1999) In Australia there are 690,000 enrolled in higher education courses. A key segment for online education players is the distance learning market. In 1998-1999, the total value of Australia’s education exports was AUD$3.182 billion. Of the estimated 85,900 international students, 70 percent are on campus in Australia, 7 percent are off campus by distance education, and 23 percent are studying at offshore campuses, according to International Development Program (IDP). Online delivery of Australian course work could potentially accelerate local penetration of international markets. (http://cyberatlas.internet.com/big_picture/geographics/print/0,,5911_228181,00.html)

ONLINE EDUCATION IN AUSTRALIA

In accordance to the Nielsen Net Ratings research out of 10.06 million of the population that is 52.49% has been online users in Australia. (http://www.nua.net/surveys/how_many_online/asia.html) Online learning is opening up the educational possibilities for students at all levels, making education more accessible than ever before.

The Department of Education, Training and Youth Affairs (DETYA) survey of online education in Australia defines three types of online, with the types varying according to the degree of dependence on the Internet. DETYA`s definitions are as follows. (Gallagher, M., 2001).

Web Supplemented: Participation online is optional for the student. Information, that may include course descriptions and study guides, examination information assessment overview, reading lists and other on-line learning resources, is used to supplement traditional forms of delivery.

Web Dependent: On-line interaction with the education content and in communicating with staff and/or other students is a compulsory requirement of participation although same traditional on-campus component is retained.

Fully On-line: There is no on-campus direct contact component in this mode. All interactions with staff and students, education content, learning activities, assessment and support services are integrated and delivered online. Online study has also been
described as follows. (Finder, K and Raleigh, D., 1998)

Informational: The online unit site can be classed as informational if its main purpose is to provide information about the unit. For example, the site might only contain a unit outline and assignment descriptions. This type of online site is usually considered as an optional information source for students.

Supplemental: The online unit site can be deemed supplemental if it is used to enhance other forms of instruction. For instance, the site could be used to enhance face-to-face instructions by providing lecture notes and links to useful web sites.

Essential: In this case unit materials and resources are available from the site and it is essential that students use the unit site in order to complete the unit. The online unit site is designed to be a significant component of the unit. It is necessary for students to have full web access.

Fully Online: The site can be classified as fully developed if it is used to deliver the unit entirely online. Delivering a unit completely online means that there is no face-to-face interaction, and that course content, assignments, and communication is dealt with online. It is necessary for students to have full web access.

BACKGROUND

IDP Education Australia’s biannual survey of international Students in Australian Universities reported that in Semester 1, 2001 there were 43,769 students enrolled in Transnational Programs at Australian Universities. Of these, 34,473 students were attending offshore campuses of Australian institutions and 9,296 were studying off campus. (Meares, D., 2001).

Since 1996 there has been steady growth in the number off-campus students such that, in Semester 1,2001 they represent 7.3% of enrolments in Australian institutions. Given the increasing emphasis on web-based learning, it is inevitable that on-line delivery constitutes all or some of the elements of the study programs of many of these off-campus students.

ONLINE EDUCATION SURVEY

In the period May to July 2001, International Development Program (IDP) conducted a survey of Australian institutions in order to document their current policies, practices and plans for online education for international students. The outcomes of the survey are presented below. (Meares, Denis., 2001, p.10).

The survey was distributed to all universities and a selection of vocational and Training institutions and organizations. Initial contact was usually with staff of the International Offices who directed the survey team to the most appropriate people in their institutions to complete the survey.

The majority of the respondents to the 2001 survey worked in teaching and learning centres, central administration or planning, information technology units or centres that were described as having a flexible or distance learning orientation. More than a third of respondents described their units as having a specific online education function such as “developing the university’s online capacities and activities”.

Thus, unlike IDP’s 2000 transnational education surveys, which were completed mainly by staff with particular interest, experience or expertise in international education, this survey presents the perspectives of staff with stronger involvement in mainstream domestic education. The fact that these staff members were usually recommended by
International Office staff indicates perhaps that online education for Australian students than other forms of transnational education. This is supported by responses to same of the questions in the survey.

In all, responses were received from 26 institutions and organizations (63% of those contacted). These included 23 universities, 2 TAFE institutions and 1 TAFE organization. Importantly, responses were received from most of the institutions that are generally recognised as having a strong online education program. Thus, the results can be considered to be indicative of trends among Australian institutions.

ONLINE DELIVERY

While institutions develop and delivery online education in many different ways, three key models for delivery may be identified. An institution may: (Hacket, Jeanette., 2001)

- Undertake the development, delivery and management of online education programs using proprietary software that enables university academics and administrators to create online courses and manage student learning activities (in-house). For in-house development and delivery online education university require. Appropriate hardware and systems from providers such as Microsoft, Sun Microsystems, Cisco Systems and IBM, The University may then buy-in proprietary software, from commercial providers such as Blackboard, Web CT, Macromedia.

- Outsource some or all of the online education activities to commercial service providers (outsource). A university may outsource some or all aspects of the online preparation and delivery to subcontractors, for example project managers, content experts, instructional designers, editors, web producers, artists, content reviewers, programmers, as well as marketers. Learning management systems may be outsourced including hosting, instructor training, technical support and storage of course content and student activity records.

- Collaborate with other universities and a broker which can provide the infrastructure (collaborative). There are many examples of online delivery being undertaken through a collaborative relationship. Multilateral university collaborations enable the costs of program development and infrastructure to be shared and the market base to be expanded. Commercial provider partners may be appropriate to provide intellectual property, technical skills, market channels, investment and management skills.

Online program, delivery relies on a variety of computer and information technology support services. That requires specialized skills in media and publishing, which may be provided by commercial organizations. Special software, web design, portals, instructional design, online textbooks and online examinations are required. Therefore for the delivery of online education the cooperation between Universities and commercial organizations is needed to provide the opportunity for improved efficiency and competitiveness for universities.

Although the first non-military use of the Internet was by universities, the online education market has only recently begun to gather pace in Australia. NextEd Ltd is targeting worldwide market for online education through an end-to-end solution that includes course conversion, project management, marketing, distribution, e-commerce student support. NextEd has agreements with Stanford University of Southern Queensland, the Australian Catholic University and La Trobe University to convert and deliver specific courses online.
COURSES AND ENROLMENTS

Despite the fact that within some institutions there is resistance to online because the medium is deemed to be inappropriate, a wide range of online courses is currently available. While many of these are business and commerce courses, courses in Arts, Aviation, Community Management, Education, Engineering and Surveying, Environment, Health Science, IT, Medicine, Mining, Nursing, Organisational Behaviour, Pain Management, Project Management, Science and Sustainable Development are also offered exclusively online.

While most respondents were unable or reluctant to provide details of the number of courses and enrolments in those courses, 11 institutions reported a total of 492 courses offered exclusively online. Of these, 8 institutions indicated they had more than 37,000 enrolments in exclusive online courses, with more than 1300 of these being international students. The same 8 institutions indicated they had more than 3000 online courses supporting traditional distance education, with 184,000 enrolments, of which almost 8,000 were international students. (Meares,D., P12).

While DETYA’S current survey of online courses will provide a comprehensive overview of Australia’s online programs when the results are published in 2002, this sample clearly demonstrates that online education comprises an important of Australia’s international education provision

MACQUARIE UNIVERSITY INTERNATIONALISATION VISION

Macquarie University, One of the top three leading universities of Australia, has a vision for their International online education.

Macquarie’s vision is to be a borderless university with a particular outreach to the Asian-Pacific and increasing reputation for the development of graduates across the world that are prepared for the global society of the 21st century. This strategic vision informs all of our activities; international and domestic.

The vision suggests strongly, that in Macquarie’s response to international on-line education developments, they should integrate their approach in a strategic way for; (Macquarie University, International Office, Project Paper, Macquarie: A Borderless University, 2001).

- Programs provided on campus for international and domestic students with a high degree of flexible delivery
- Offshore programs provided through partners, such as Times and HKMA with a high degree of flexible delivery
- Online or substantially online or distance programs through partners or directly from Sydney for domestic and international students
- Double degree arrangements with overseas institutions
- Global consortia and partnerships
- New Programs consistent with Macquarie’s growth patterns and strategies
- Articulation arrangements with overseas and Australian institutions to enable students to complete Macquarie programs in Australia and overseas.
- Flexible implementation of higher degree research programs offshore
- Licensing of Macquarie programs to institutions and private providers consistent with educational quality
- Marketing strategies with partners and representatives

The strategic vision is implemented by taking a coherent approach to all of these aspects in terms of marketing, student administration and educational values.
TO PROMOTE INTERNATIONALISATION IN TEACHING AND LEARNING

Internationalisation covers all aspects of the University’s endeavours—international reputation, world-class staff with a global outlook, graduates prepared for the global society and a heightened appreciation of diverse cultures. Macquarie’s vision is to be a borderless university with a particular outreach to the Asia-Pacific.

- International students are a priority, onshore and offshore.
- International location and multi-mode delivery provide flexible programs on the home campus and through partner institutions for international and domestic students.
- International qualifications will include dual degree and flexible credit transfer with a network of overseas institutions.
- International experience is promoted through student and staff exchange and work placements, assisted by travel scholarships and grants.
- Internationalisation of the curriculum supports cross-cultural understanding.
- International marketing and recruitment makes effective use of partners and representatives and modern technology.
- International programs include a range of English language services and preparatory courses.
- International Office activities support international students and promote international experiences to the student body.

TO SUPPORT FLEXIBLE ACCESS TO LEARNING RESOURCES

To support innovative teaching and learning through a range of approaches, including flexible access to learning resources and effective use of information technology.

- Selected programs will be available on-line and by distance for domestic and international students, supported by a network of learning centres.
- Multi-mode and technologically enhanced teaching will be designed to enrich the learning experience for all students.
- The Centre for Flexible Learning will be a reservoir of expertise and research and promote the dissemination of good practice for widespread use of flexible learning resources.
- The on-line teaching facility provides interactive delivery, communication tools, and management and evaluation facilities, with a simple user interface.
- Flexible development grants are available to support innovation and up-take of new ideas.
- The Library will expand networked information services, on-line access to collections and information technology training.
- Technological infrastructure is continually improving through increased bandwidth and connectivity and access to digital recording.
- Integrated information systems and e-commerce will be exploited for student administration and support.

DEVELOPMENT DELIVERY MODELS

The Proposed development model has two components; a Flexible Delivery Model and a Network (hub and spoke) Approach to educational delivery and support.

ALTERNATE FLEXIBLE DELIVERY MODELS

A Self-directed resource based delivery using traditional technologies (traditional distance education);
- Printing of Course Material
• Audio tape duplication
• Dispatch and receipt via post
• Tutor/marker
• Student administration

B Self-directed traditional resource based delivery using online computer mediated assignment submission and support;

• As for A
• Small course and unit web site (WebCT)
• Instructional design advice on integration
• Dispatch and receipt via electronic means
• Server administration and technical overheads
• Online moderator (30 minutes/student/week)

C Self-directed electronic resource based delivery technologies including online computer mediated assignment submission and support.

• As for A, B
• Course and unit web site
• Multi-media rich web site/audio-digital format
• Instructional design advice on resource development/re-development
• Online help-desk support (30 hours/unit)

D Student-centred with offshore campus session blocks supplied by tutor or lecturer

• As for A,B,or C
• Offshore partner/classrooms and laboratories/administration
• Some Macquarie or local staff provide supporting tutorials/lectures
• Some licensing of programs with Macquarie responsible for quality assurance, but not necessarily teaching.

E Full onshore or offshore campus attendance with flexible delivery for some units.

• As for D
• Full teaching by Macquarie or locally engaged staff

F Full onshore on offshore campus attendance without significant use of flexible techniques from A,B or C.

• No significant use of A,B or C (default position requiring change.)

MODELS FOR EDUCATIONAL DELIVERY AND SUPPORT

A Simple Hub and Spoke Model
Over the past decade, Australian universities have developed a number of models in the operation of offshore and distance education programs. The most popular model has been one in which the university operates a degree program at a partner site offshore. Students either complete the program at the offshore location or travel to the home campus for the final year. This is a hub and spoke model, which radiates from the home campus (the central hub) to sites throughout the region or world (the hubs and spokes). In general the linkages are on a one for one basis, with programs being offered at the partner location with physical resources, local administration and recruitment being handled locally and some combination of locally engaged and home university teaching staff. In all cases, the home university would be responsible for the academic program and its quality assurance at all centres. Monash, Curtin, RMIT, Macquarie, Latrobe and Deakin (using its distance
learning materials) have been major users of this model.

A Radial Model
Some universities, notably Melbourne, QUT and UNSW have taken the view (all with some small scale exceptions), not to develop programs offshore. Thus all international activity is focussed on the home university location.

An Offshore Campus Model
Monash University and RMIT have moved towards the development of full offshore campuses. Monash has a campus development with the Sunway group in Malaysia and is developing a campus in South Africa. RMIT has approval to develop a campus in Vietnam. These initiatives begin to take on the trappings of a full campus in terms of academic structure, administration, facilities, student services and research. At this stage there is tight faculty level control from the home campus, but over time semi autonomous models will evolve with the host organization exercising same academic control.

A Licensed Program Model
A variation on the above is for the home institution to license a program to a partner offshore. The partner then takes responsibility for the local operation of the program with the home university responsible for quality assurance. RMIT has licensed a range of IT diplomas to a private provider that operates throughout the Asian region. Quality assurance is provided by RMIT at multiple sites with students able to travel to Singapore or Melbourne to complete the degree.

THE MACQUARIE MODEL FOR INTERNATIONAL DELIVERY

Partners
Offshore partners operating Macquarie programs in a fully taught or substantial online mode according to models D or E, for example HKMA.

Licensed Partners in Australia or Overseas
Partners in Australia or overseas to operate programs on behalf of Macquarie with offshore partners or directly.(similar to the SIBT model).

Articulation agreements
Agreements with private and public institutions to enable students to complete Macquarie degrees offshore or in Sydney plus targeted cooperative agreements with overseas institutions to provide double degree structures with Macquarie University.

Quality assurance by Macquarie University
All quality assurance under the direct control of Macquarie University

Consortia (including University Consortia)
Australian or overseas institutions working together to present programs in a cooperative manner at a new location or articulate between several locations. Present discussions with Latrobe and other universities (Flinders, Deakin, Tasmania) to operate in China is an example as is our discussion with Griffith or on establishing a joint venture partnership. Macquarie has an agreement with HKMA to operate Macquarie programs through third party universities in China. The development of a virtual agency for recruiting (GGG, Monash, Curtin, USA, QUT, Macquarie).

Technology Infrastructure Partnerships
Partnerships with organizations to provide technology, potential infrastructure such as local servers, and marketing services. Such organizations may become means of carrying online content internationally, and may become offshore partners in the more conventional sense.
Global Marketing
Marketing relationships with partners and recruiting representatives including IDP to recruit for network. Including a strong web based approach.

MACQUARIE’S STRENGTHS AND WEAKNESSES

MACQUARIE’S STRENGTHS

Macquarie’s Strengths

• The successful implementation of flexible learning across the university as a key strategy (250 Units using the Online Teaching Facility)
• Strong existing offshore programs.
• Best-practice library amongst the leaders in exploiting IT and providing innovative customer support.
• A network of representatives and partner institutions across the world
• Innovative use of outsourcing of teaching through wholly owned company structures and outside companies.
• An excellent reputation both domestically and internationally.
• A well developed marketing strategy for international students.
• Some existing programs offered completely or substantially through distance learning.
• Strong management support for the concept.
• State of the art experience in operating a worldwide e-commerce based enquiry service (the Good Guides Group and Monash, QUT, USA, Curtin and Macquarie) leading to the probable development of a virtual recruiting agency world wide.

Macquarie’s Weaknesses

• Many existing subjects configured for flexible delivery but not packaged into programs.
• Commitment to and enthusiasm for distance education and resourced based learning variable across the university, and possibly weakest in strong areas of potential demand.
• Existing offshore programs are not broadly based across the university.
• Fragmentation of support for teaching and learning across several groups; separation of support for “flexible” and “distance” modes.
• Lack of same high demand courses for international students at both undergraduate and postgraduate levels such as entry-level information technology.
• Division not always market focussed and often don’t see a market need to be met quickly,
• Dependence on academic areas to develop programs, where they believe quite justifiably that their best long term interests as groups and individuals are in research and consulting,
• High teaching cost within present and proposed offshore program development.
• Student support structure not revised on the light of the new learning environment.

CONCLUSION

The development in technology has forced a radical change in many aspects to societies way of life. This development, which has influence the formation of societies, has placed a central roll on education.

Technological development has assisted in the creation of information delivery and information society. Educational institutions are place under pressure to meet the
expectations of more efficient delivery of education. In the world of globalisation to reach everyone, anywhere education institutions in developed and developing countries are working at a great speed toward meeting these demands of distance education.

On line education plays a major roll in the delivery of education, which is more cost effective for educational institutions, many universities around the world has began the foundation for the development of online education.

The number of enrolments in online education varies depending on the widespread use of technology within the country. Overall response from those users indicated a more positive view towards online education. The positive impacts were identified included; improvements in teaching and learning, greater awareness of the changing nature of knowledge, expanded marked for the institution’s courses, an enhanced profile for the institution. However along with the positives were the negative effects on users were; difficulties of access for some students, level of computer literacy of students and staff, pressure on resources, staff workload, need for restructuring of traditional approaches, need for synchronising administration systems. The unforeseen outcomes of online education were; development of an understanding of the changing nature of knowledge, changes to teaching and learning styles and practices, higher and different demand from what was expected, higher costs than expected.

The development of international online education project “Borderless University” by Macquarie University is a good example for other universities preparing for the 21st century and global education. The university has been given a one-year plan for the development and implement their vision, which aims at producing international income for the university. Management of the project has identified the weaknesses in the project but believe that they will overcome these issues and develop the international online education for the Asia Pacific regions.

The future of online education was expected to narrow the gap between on-campus and off-campus students, there is existing evidence that some institutions are finding it difficult to distinguish the domestic and international students who are studying on-line. The expectation for the next decade were; online will be central to all activities, all administration will be online, all students will be studying online, there will be a convergence of on-campus and off-campus. Indication from the respondents at an industry level would be accepted as another form of delivery, delivered by a variety of providers. Beyond the speculation, there is a definite commitment by many organizations to the online and virtual methods of delivery.

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