eLearning in the South Pacific: Current Status, Challenges & Trends

Survey Findings from the Pacific eLearning Observatory

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Abstract

As part of a research programme into the use of information and communication technologies (ICT) in education in the countries of the South Pacific, the Pacific eLearning Observatory at the University of the South Pacific (USP) conducted an online survey of 60 ICT and education experts across the region to assess their opinions on ICT in distance education, its current status in the Pacific, the perceived challenges to development, and recent developments. Monitoring ICT development is important to USP because 42% of its 22,000 students are distance-based learners, and access to ICT impacts directly on the design of learning delivery modes. The survey consists of 38 items including 17 ‘guestimates’ of Internet and computer access rates. Results show average primary and secondary school ICT access between 1% and 11%, with tertiary-level urban access rates as high as 70%. The survey indicates that training and capacity building, curriculum development, infrastructure, policy frameworks and top-down government support are perceived as the most important factors in ICT development. Current developments in the region range from early-stage policy formulation and the construction of ‘ICT centres’ for rural communities, to the construction of databases and online portals to support educational administration and the delivery of learning materials. The ramifications of the findings for distance education at USP are interpreted through the prism of eight barriers to online learning (Muilenburg and Berge, 2005), and the advantages and limitations of the survey method used to gather the data are discussed. The paper concludes that in spite of the challenges to ‘mainstreaming’ ICT in distance education in the Pacific, the importance of the Internet in distance education is widely acknowledged by learners and policy decision-makers alike, and USP can utilise the information gathered in the survey as part of a strategy for advancing its position as a world-leader in distance education.
Introduction

Information and communication technologies (ICT) are having a revolutionary effect on school practices, distance education, as well as government and public sector policies, and commercial and economic growth worldwide. The South Pacific’s island nations are no exception, with substantial increases in the availability of ICT and access to the Internet during the last decade (UNESCO, 2003), and in particular, an estimated growth of 80% in the number of distance-based students using ICT at the University of the South Pacific (USP) between 2000 and 2007.

Access to ICT is an increasingly important factor in distance education in the South Pacific. As USP strives to improve the academic performance of its 22,000 students and enhance the effectiveness of its 350 (mostly print-based) distance education courses, a new online course management system is being used as a fulcrum for improved quality of service during a time of rapid growth in the student population and shrinking budgets. As of 2007, USP’s bandwidth consumption has tripled in size in the last seven years, while the number of online ICT-based courses available to students is projected to grow almost 200% per annum, from 78 in 2007, to over 600 by the end of 2010, which will represent 75% of all courses offered by USP.

To manage this growth, USP is addressing a range of factors raised by the increasing use of ICT in its distance education programmes. Aside from financial, management, and ICT access issues, these factors include: academic standards and policies; learner and faculty support; the educational design of online courses including online activities, social interaction and collaborative learning; improving learner motivation; improving information literacy and technical skills; and managing the rapid expansion of USP’s satellite-based private telecommunications and ICT infrastructure, USPNet.

However, managing and making sense of this high growth requires accurate strategic information about the actual status of ICT in the Pacific region, about the kinds of ICT services, attitudes and capacities that USP’s current - and future - students have, and the needs and gaps in ICT access that must be addressed if USP is to remain a world-leader in distance education.
Therefore, while schools, educational institutions and policy makers in the Pacific aim to take full advantage of ICT’s potential in education and training, the availability of relevant data on which to base strategic decisions becomes increasingly important.

In Europe for example, HELIOS is a European Commission-funded research project to establish a “sustainable observation platform” to monitor the progress of ICT in education in Europe. The initiative is policy-centered and aims to forecast future scenarios of educational ICT development. Similarly, the EU-funded European Schoolnet programme includes a policy advisory unit focused on tracking indicators of ICT development in primary and secondary education (INSIGHT, 2000-2007). The South Pacific has no such data collection services.

In another example though, UNESCO (2001-2004) conducted an initiative to monitor indicators in development in ICT in selected Asia-Pacific countries. This included designing and tracking indicators for assessing ICT’s impact in education, establishing a database of indicators and developing a manual for pilot testing the use of indicators to assess the impact of ICT in education. In addition, UNESCO’s Bangkok office has been collecting over a dozen examples of ICT indicators for education from around the world on its website (UNESCO, 2007). In the same vein, the UK-based Observatory on Borderless Higher Education (OBHE, 2002) has also been involved in monitoring ICT in distance education. The African Information Society Initiative (AISI) also monitors ICT’s impact on peoples’ education and welfare through a variety of African-based projects (SCAN-ICT; ECA-DISD; NICI).

While the indicators themselves must be carefully selected to provide information about development of ICT in distance education, the methodological requirements are also problematic. For example, transnational research such as AISI’s often involves experts and consultants conducting desk-based and field research on the ground. Moreover, because of the scale of these projects and the time commitment required, such initiatives are often one-offs or are reproduced on an irregular basis.

Individual nations have also begun to monitor development in ICT in education. In the Netherlands for instance, the ministry of education (MINOCW, 2004) established a monitoring
service to track developments in ICT in primary, secondary, tertiary and vocational education. The aim was to assess the degree to which there is a positive, balanced development around ICT within Dutch education. Special attention was given to factors that could help government policy and schools to manage the ICT introduction process. The Swedish government (SNAE, 1999), the UK National Grid for Learning (NGfL, 1999), and the US National Center for Educational Statistics (NCES, 2002) have conducted similar research designed to inform stakeholders and policymakers in specific ways about the role ICT is playing in education. France, Ireland, Australia, Japan and other nations have also launched observatory-style projects in the last 8 years.

Typically, government departments of education, ICT agencies and statistics bureaus are tasked with annual data collection and analysis on pre-determined indicators. Such regular, politically-mandated and well-funded research can yield valuable information on trends in ICT development over time.

With respect to ICT in distance education in the nations of the South Pacific, there is little coordinated effort to monitor developmental trends in ICT using specific indicators. However, working on behalf of the Commonwealth of Learning, Brandjes (2002) conducted a survey of 27 states, including a number of Pacific nations, in an ‘environmental scan’ of educational ICT capabilities in the small states of the Commonwealth. He concluded that investment in pedagogical training was necessary in order to take better advantage of ICT in education, that there were many misconceptions about what ICT in education is, and that most states surveyed face steep financial and technical hurdles. At the same time, the report established that stakeholders are eager to collaborate to help solve problems and overcome barriers to the successful uptake of ICT in education. This report was a wide-ranging initiative covering many educational and economic sectors, providing little in the way of quantitative information, but offering proposals for further development, in particular towards the Virtual University for Small States of the Commonwealth (VUSSC), an idea which thus far has not gained much foothold.
In this context, the Pacific eLearning Observatory was established in 2006 with a grant from the University of the South Pacific to monitor the development of ICT in education in the 12 USP member nations: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Samoa. The objective of the project is to use effective and low-cost methods to provide strategic information to a range of stakeholders, including educators, policy-makers, and especially the Distance & Flexible Learning Support Centre at the University which caters to over 10,000 distance-based students across the Pacific. The project uses mixed methods to track development indicators such as infrastructure development, Internet access, capacity-building projects, curriculum revisions relating to ICT in schools, teacher training and professional development, policies related to ICT, stakeholder networking, and financing. The research addresses the need to gather reliable, up-to-date information on the development of ICT in education in the Pacific and to make this available to the public on the Internet (at http://www.usp.ac.fj/pelo/).

However, the difficulty in gathering such information from small countries, widely distributed in a vast region, with little or no funding or capacity for tracking this data requires low cost but effective data collection methods. Thus, as part of research into the use of ICT in education in the countries of the South Pacific region, the Pacific eLearning Observatory conducted an online survey of 60 ICT and education experts across the region to assess their opinions on ICT in education, its current status in the region, the perceived challenges to further development and any key developments.

This information is used here to paint a picture of ICT in distance education in the Pacific region, but using the ‘shortcut’ of expert surveys rather than the more precise but painstaking state-funded data collection programmes, or the time-consuming and expensive assessments conducted by consultants on the ground in each country.

**Survey method**
The survey was designed to paint a broad picture of the Pacific region as a whole, without specific regard to individual countries (although this information will be analysed and published separately). Since little or no basic data is available on ICT in education in the South Pacific, the survey is intended to gather baseline information that can be used to inform distance education policy-makers at USP and region-wide annually and over an extended period of time.

The survey was designed by the Pacific eLearning Observatory research group, revised by a wider group of invited experts in ICT and education, and revised once again by the research group prior to being made public. All development and revisions were conducted using email and online collaboration. The survey was designed to be anonymous in order to encourage honest responses without risk of professional compromise.

Once designed, the survey was implemented and delivered in Moodle (2007), USP’s new learning management system that includes a survey tool. The survey was available online between May and August 2007.

Survey instrument

The survey was designed for online delivery and consists of 38 items combining free text, multiple choice and yes/no responses. The survey addresses the following topics: demographics of the respondents (four items), perceptions of ICT in education and teaching practices (10 items), ICT access and school networking estimates (17 items), current national ICT initiatives for education (one item), deployment strategies (one item), current challenges in ICT development (one item), current educational ICT initiatives (one item), strategies for the development of ICT (one item). A final question invited participants to make any general comments.

Survey participants

Participants in the survey were educators, policy makers, experts in information technology and researchers in the general area of educational ICT (see Demographics section below for more detailed information on the participants). Participants were invited through email messages sent
to three pre-selected listservs: the Network of Pacific Educators (NOPE); the Pacific Chapter of the Internet Society (PICISOC); and the Pacific Regional Initiatives for the Delivery of basic Education (PRIDE). The total membership of these three lists is estimated at around 600 persons. Additional invitations were sent to individual experts in the region known to the research group. In addition, recipients were asked to forward the invitation to their colleagues or expert contacts. A total of 60 completed surveys from 16 Pacific countries were analysed, though not all questions were answered by all participants.

Results

The results were compiled into nine broad headings: demographics (of the participants), the perceived benefits of educational ICT, access to ICT and the Internet, the role of ICT in the curriculum, the priority areas for ICT development, the top three educational ICT challenges, current educational ICT initiatives, strategies for development, and general comments. These sections are discussed below.

1. Demographics of the respondents

The first group of questions was designed to determine where the respondents are based, what their professions and genders are and what their skill levels are. The Cook Islands returned three, five came from the Federated States of Micronesia, 12 from Fiji, two from Kiribati, three from the Marshall Islands, two from Nauru, three from Niue, one from the Northern Marianas, two from Palau, three from Papua New Guinea, five from Samoa, 10 from the Solomon Islands, one from Tokelau, three from Tonga, one from Tuvalu, and three from Vanuatu (Table 1).

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>3 (5.00 %)</td>
</tr>
<tr>
<td>Federated States of Micronesia</td>
<td>5 (8.33 %)</td>
</tr>
<tr>
<td>Fiji</td>
<td>12 (20.00 %)</td>
</tr>
<tr>
<td>Kiribati</td>
<td>2 (3.33 %)</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>3 (5.00 %)</td>
</tr>
</tbody>
</table>
The survey drew responses from a wide range of professionals in government, academia, schools, information technology and consulting. Although the survey was anonymous, job titles included secretary for education, deputy director for education, university lecturer in education, distance learning supervisor at a rural community centre, ministry of education IT administrator, and IT support officer at a secondary school, to name a few. Of the 60 surveys analysed, 27 surveys were submitted by government-related policy developers or administrators in education and training; 19 were IT professionals engaged in education or training, and 14 were engaged with academia, schools or other educational institutions.

Respondents self-rated their IT skill level as mostly intermediate (n = 30; 50%), or novice (n = 11; 18.3%), expert (n = 9; 15%), or advanced (n = 10; 16.6%).

Of the 60 responses, 37 were from men and 23 from women.

2. Perceptions of ICT in education

The survey asked 10 general questions about the perceived benefits of ICT in education and teaching and learning practices.

When asked to agree or disagree with the statement: “Educational ICT would be beneficial for students the Pacific,” all 60 respondents (100%) agreed with the statement. However, when asked: “How well integrated is ICT into your country’s curriculum?” 14 (23.3%) responded that it was not at all, 37 (61.6%) responded that it was partially integrated, while only 9 (15%) said it was well adapted. When asked: “How would you
rate your country’s educational system’s overall effectiveness on a scale of 1-10?”

responses were normally distributed, with no respondents claiming a top rating:

![Figure 1. Rating of country's educational system's overall effectiveness on a scale of 1-10](image)

Respondents were next asked to indicate if ICTs were currently used in the teacher training programme in their respective countries. (Note that several countries in the Pacific region have no formal training pre-requisite for teachers.) Seven respondents (11.6%) said they didn’t know, 21 (35%) said no, it wasn’t, while 29 respondents (48.3%) said ICT was used in teacher training.

Respondents were also asked to characterise the effectiveness of their countries’ teacher training programme with respect to ICT awareness and ICT support. Twenty respondents (33.3%) characterised their national teacher training programme as “failing”, 35 (58.3%) said it was “adequate”, while one person said it was “excellent”. Four did not answer.

When asked how ICT can be best used in education, respondents voted for up to three from a list of eight options. The single most beneficial perceived ICT activity was
training and capacity building, followed by localised content development and the creation of new learning materials (Table 2).

### Table 2. Educational ICT activities that would be most beneficial

<table>
<thead>
<tr>
<th>ICT activity</th>
<th>Total number of votes (n=60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training, capacity building</td>
<td>47 (78.33 %)</td>
</tr>
<tr>
<td>Localised content development</td>
<td>30 (50.00 %)</td>
</tr>
<tr>
<td>Create new learning materials</td>
<td>21 (35.00 %)</td>
</tr>
<tr>
<td>School ‘e-twinning’ Partnering</td>
<td>20 (33.33 %)</td>
</tr>
<tr>
<td>Public-private partnerships</td>
<td>19 (31.67 %)</td>
</tr>
<tr>
<td>Locating curriculum software</td>
<td>17 (28.33 %)</td>
</tr>
<tr>
<td>Form network of national experts</td>
<td>16 (26.67 %)</td>
</tr>
<tr>
<td>Collective management</td>
<td>7 (11.67 %)</td>
</tr>
</tbody>
</table>

Respondents were then asked three yes/no questions about school networking. The first item asked: “Would schools in your country benefit from having a *school-wide* ICT network?” Fifty-eight (96.6%) said yes, while one person (1.6%) said no, and one did not answer.

When asked: “Would schools in your country benefit from a *nation-wide* ICT network?” the same response profile emerged.

Finally, when asked: “Would schools in your country benefit from a *Pacific region-wide* ICT network?” 52 (86.6%) respondents said yes, three (5%) said no, 4 (6.6%) said they didn’t know, and one did not answer.

The survey also asked respondents about the *One Laptop Per Child* initiative, an effort to provide students with low cost laptops to aid in their education. The OLPC programme has also been touted as an initiative that could boost distance education amongst tertiary and continuing students. Forty-four respondents (73.3%) agreed that the OLPC initiative would be beneficial for students in the Pacific while 14 (23.3%) said maybe. No participants disagreed but two participants did not answer.
3. Access to ICT, computers and the Internet

The bulk of the survey concerned access to ICT in the region. This question was pivotal in helping to determine the current extent of ICT access for distance-based as well as prospective distance and USP students. Respondents were asked to “guestimate” the percentage of primary, secondary, tertiary, and teacher training students who had access to computers and to the Internet, in both rural and urban areas in their own countries. The mean scores are shown in Figure 2.

The results showed a number of trends:

- Urban students and teachers have significantly better access to ICT than their rural counterparts;
- Tertiary (distance) students, teacher trainees, and urban teachers have greater access to ICT;
- Primary and secondary students and in particular, rural teachers have the lowest access.

Overall, there was a marked difference between pre-tertiary and tertiary levels of access to ICT, and the low access rates of rural teachers was a revealing factor behind low rural awareness of ICT.

The 60 respondents estimated that an average of 17% of the population of approximately 9 million people in the region has at least some access to the Internet.
Figure 2. Educational ICT Access in the Pacific Region: PCs and Web

User group and ICT type: PC / Web

% Access

Pacific pop. Web Access 17
Rural primary PC 4
Urban primary PC 12
Rural primary Web 2
Urban primary Web 7
Rural secondary PC 11
Urban secondary PC 26
Rural secondary Web 7
Urban secondary Web 16
Rural teachers PC 29
Urban teachers PC 62
Rural teachers Web 13
Urban teachers Web 43
Tertiary student PC 74
Tertiary student Web 59
Trainee teacher PC 66
Trainee teacher Web 52
4. What should be the role of ICT in the curriculum?
In order to help gauge future needs and expectations about ICT in education, respondents were asked to provide their opinion as to what role ICT should play in their country’s school curriculum. The perceived importance of ICT was underlined by the emphasis on ICT as a “priority one area,” that it “should be an enabling mechanism,” that it is “core,” “crucial,” “pivotal,” that it should play an “immense role,” a “leading role,” a “very dynamic role,” that it should be an “integral part,” and a “driving force” in the curriculum. By contrast, one respondent was “not sure” what role ICT should play in their country’s school curriculum.

Respondents indicated that ICT should be central to the curriculum, both as a subject and as a tool for learning and teaching. The use of ICT is perceived as vital for information literacy across all subject areas, which is a central concern in isolated Pacific Island countries. ICT is also perceived as an important medium for the delivery of learning, especially for tertiary (distance-based) studies, and in rural areas. More specifically, respondents reiterated that ICT can be used for classroom instruction, for research, for teacher and student presentations, and for extending teaching and learning skills. Improved assessment and learning support are also perceived as being strongly supported by ICT. Several respondents emphasised the importance of using ICT to develop and share digital curriculum materials that are localised to Pacific contexts.

5. What are the priority areas for ICT development in education?
In order to further gauge future needs and expectations about ICT in education, respondents were asked to describe their perceived priority areas for educational ICT development in their country. A range of issues arose, and the most common themes were
related to overcoming the distances separating rural Pacific communities, the need for new infrastructure, the many benefits for (distance) education as well as health, government and the NGO sector, and the need to train skilled staff.

While several countries in the Pacific have yet to develop an ICT policy, almost a third of respondents echoed the recurring theme of the importance of developing ICT skills and capacity, and training trainers who will stay in the country and not emigrate. Overcoming rural barriers to education using ICT is perceived as especially important in the larger rural Pacific Island nations such as Solomon Islands, Vanuatu and Fiji. By the same token, several respondents emphasised the importance of local government and community ownership of scarce ICT infrastructures – especially in education - in the face of corporate and monopoly control that leads to unaffordable and recurring prices. Indeed, cheaper, faster, more ubiquitous, environmentally-sound (wireless, solar-powered) ICT infrastructures were urged by some 20 respondents.

6. The top three educational ICT challenges

Respondents were asked to describe the top three challenges facing educational ICT development in their country. Fifty-seven responses were analysed and the following ten most common perceived challenges were identified:

1. Lack of adequate financing;
2. Lack of skilled personnel;
3. Poor access to infrastructure and ICT equipment;
4. Low awareness about the benefits of ICT;
5. Ineffective secondary infrastructures such as electricity, roads and related services;
6. Low connectivity speeds and inadequate networks;
7. Difficulties in maintaining and repairing broken equipment;
8. Lack of integration of ICT into the curriculum and outdated curricula;
9. Lack of “ICT culture”: and,
10. Lack of trust and suspiciousness about ICT.

7. Current educational ICT initiatives

In order to assess emerging developments impacting distance education and ICT, respondents were asked to describe the key current educational ICT initiatives in their country. Over half of the 55 respondents indicated that their government is currently taking little or no action in this area, or if it is, they were unsure what specific actions were involved.

Over a dozen respondents were strongly critical of the absence of progress in their country. Of the respondents that did identify current ICT initiatives, eight named the initiatives in their country and discussed them to some level of detail. The purpose of this question however, was to assess what types of development initiatives are taking place. To this end, the following types of projects were cited most frequently:

- Establishing an educational ICT working group or similar team of experts to study and draft possible policy directions to cabinet or government;
- Collecting data about the needs for educational ICT through stakeholder consultations;
- Testing new pilot projects, curriculum developments or community/school services;
- Initiating ICT training programs or schemes for teachers, IT professionals or the community;
• Reviewing the curriculum to determine how best to incorporate or update the use of ICT;
• Reviewing legislation relating to telecommunication services and access impacting education;
• Building (remote/rural) ICT centres for improved school and community access to email, internet, telephone, fax and basic office services;
• Implementing schools databases such as an educational management information system;
• Upgrading existing ICT infrastructures; and,
• Developing schools ‘portals’ (such as intranets or standard websites) to access learning materials.

8. Strategies for development

Given the important role ICT is perceived to have, the challenges faced, and the actual initiatives currently underway, respondents were asked to identify the most important strategies that could help further development in ICT in education. This question drew 51 responses that fell broadly into seven categories:

Planning, and policy

Respondents consistently emphasised the strategic importance of designing and developing a workable ICT implementation plan. Such a plan or national strategy would be based on consultation and expert input, and would involve all key stakeholders before ideally becoming legislation. Consistent, top-down support from the government is perceived to be of fundamental importance. Such a plan would provide for the “migration of educational processes from manual to technology-based” systems wherever possible, and would include clear guidelines regarding the use of ICT in the curriculum for distance-based and face-to-face students. Such a plan could,
moreover, involve a “yearly planner” or project-based approach that can be closely monitored and evaluated.

*Legislation*

Related to planning and policy, over 20 respondents emphasised the need to develop and review legislation that may be hindering ICT development in education. A key underlying factor is perceived to be the need to end monopoly control of ICT infrastructures and networks with the introduction of competition for local telecommunications operators. Legislation should be used to lower Internet access costs, open up competition for Internet service providers, and even create tax-free ICT zones. Several respondents underlined the importance of forging partnerships between government and companies that would provide ICT services to schools mandated and controlled through legislation, particularly in smaller countries where telecommunications monopolies are the only viable option.

*Training and capacity building*

Most respondents emphasised the importance of ICT training at all educational levels that would lead to overall capacity development and improvement in distance education access. Respondents envisioned initiatives that could increase ICT training and usage in school classrooms, for in-service teachers, as well as other general education-related and administrative offices. Tactics here included organised training programmes, public campaigns and promotions, awareness-raising efforts (in the media), workshops and seminars. It was recognised that substantial funding would have to be earmarked for this line of activity.

*Curriculum development*

Another area of strategic importance raised consistently by respondents concerned the integration of ICT into the curriculum. An often-repeated aim should be to make ICT education “compulsory,” and as early in the school cycle as possible. Respondents wrote that students should be trained in information literacy but moreover, student learning itself should utilise ICT while learning materials and content should be ICT-based and localised wherever possible.
Access to ICT

Respondents cited several strategies to improve access to ICT, especially for distance-based students and learners in rural areas. Providing access to all schools, ideally at broadband speeds, was mentioned by over half of the respondents, with one third advising that access should be free or low cost. This would comprise extending school networks to more primary and secondary schools. Building more “Internet centres” or community ICT resource centers for public access was also recognised as important. One respondent recommended providing free access to the Internet for all people aged 5–35; another gave a strong endorsement of the OLPC discounted laptops initiative.

Reduce costs

The high costs of access and equipment were cited by many respondents as a key hindrance to educational ICT development. Several participants recommended providing free or low cost access to the Internet and to ICT equipment, particularly for rural areas and outer islands. Related to this, a planned, collective approach to the replacement of equipment was also mentioned. In terms of content and learning materials, five respondents advocated for access to lower-cost tools and localised multi-media resources across all levels and subjects of the curriculum.

Sustainable development of ICT

Ten respondents discussed the importance of sustainable and environmentally sound practices. Thus, a broadband network environment with a robust computer was perceived as important, equally important is that it has a low power requirement supported by renewable (solar) energy sources. In this way, ICT development planners must give thought to sustainable processes and realistic services that fit the local environment.

9. General comments

As a final question, respondents were asked to make any additional comments. One third of the 28 respondents to this optional question expressed enthusiasm and appreciation for the survey
itself, believing it was much-needed and would help frame issues in the sector and aid in collective approaches to educational ICT development.

Respondents made a range of other comments. Forming local, regional and international partnerships for the development of ICT in education was emphasised and the ongoing theme of IT training for capacity-building was reiterated by several respondents. One respondent mentioned the effects of social unity that ICT can bring about through improved communication and access to knowledge. Another comment underlined once again the need to develop new, localised educational content for meaningful and effective distance education and training.

**Discussion**

This survey generated baseline data about educational ICT access, as well as expert opinions in the sector on a range of issues relating to ICT in distance education.

Key findings include estimates that Internet and computer access levels on average for primary and secondary schools are well below 10%, with tertiary urban access levels as high as 70%. Respondents also estimated that approximately 17% of the Pacific population on average has access to the Internet, a finding that may be higher than estimated elsewhere (for example Internet World Stats, 2007). There is however a wide gap between rural and urban access, although some small Pacific nations (such as Nauru, Niue, and Tokelau) have little or no such distinction because of their small size.

The ICT services provided by USPNet across the region explain much of the high level of Internet and computer access amongst distance tertiary students, while the growing commercial Internet penetration in urban areas may help to explain the relatively high levels of ICT access in other demographics identified in the survey.

The survey results also indicate that training and capacity building, curriculum development, infrastructure (including electricity, transport and basic services), financing, renewed policy initiatives and top-down government support are perceived as the most important
factors to address in educational ICT development. This is consistent with Brandjes (2002) study, and with UNESCO’s surveys (2003).

However, the countries of the South Pacific vary widely according to size, distribution and socio-economics status. For this reason, current developments in ICT in education range widely from early-stage policy formulation and legislative review (as is the case in the Papua New Guinea for example), pilot testing of new initiatives (in the Solomon Islands), and the construction of community ICT centers for rural areas and community (as in Samoa and Fiji), to the construction of databases and in some cases, online portals to support national educational administration and the delivery of learning materials (as in the Cook Islands for example).

In this sense there is a *continuum of development* across the Pacific, with some countries formulating a vision, other countries introducing ICT as an information literacy lever, and others seeking to more fully incorporate ICT into the daily use of the curriculum. There may be a decade or more gap between these phases of the continuum. Moreover, those countries that have progressed further along this continuum and that have incorporated ICT into the curriculum, still face ongoing pressures to sustain their initiatives, to secure top-down government support, and to continue to deploy relevant and effective policies.

*Survey implication for USP’s Distance Education programme*

The survey findings will inform USP’s distance education policy in a number of respects. As the leading educational institution in the region seeking to deliver quality educational services to a broad range of distance students, the role of ICT is central to service planning and delivery. Of particular concern is the need to provide equitable, inclusive access to an ever-increasing number of students requiring the skills and capabilities to join the global work force. This, in turn, requires tackling the barriers to accessing online education.

In a factor analytic study of the barriers to online learning, Muilenburg and Berge (2005) identified eight underlying constructs that shape student experience of online education. In the
developmental ICT context of the Pacific, these factors can be used as a prism with which to interpret the survey data and inform the strategic planning of the university’s distance education services.

The first factor, administrative and instructor issues, addresses the “barriers that administrators and instructors control, such as course materials not always being delivered on time, lack of sufficient academic advisors online, and lack of timely feedback from the instructor” (Muilenburg & Berge, 2005, p. 20). With print-based delivery, this barrier has been a particular concern for students and the university management for decades, and contributes significantly to student attrition and low performance. The growing use of ICT and distance learning management systems in the region will make learning materials, instructor access and timely feedback more accessible for students. Course materials can be posted online, especially if paper-based materials are slow to arrive to remote locations, while email, chat and discussion boards can be used to communicate with lecturers. However, the survey data confirms the suspicion that rural students with little or no ICT access will continue to be adversely affected, and efforts to improve ICT access to rural areas – where some 60% of the Pacific population lives (Haberkorn, 2004) – will become increasingly vital. USP distance education policies must therefore address the need to improve rural ICT access, ideally by extending the reach of its own USPNet centers (with low cost, environmentally-friendly solutions). Teachers (especially in rural areas) should also be better supported to use ICT-based classroom activities to help prepare students for higher education and ICT-based distance learning. These tactics will help to resolve the growing tension between providing cutting-edge ICT-based learning services to the proliferating ‘wired’ urban learners while traditional paper-based distance students – perhaps most in need of educational opportunities - are left further behind.

The second factor discussed by Muilenburg and Berge is social interaction, and relates to the barriers that “students perceive as being caused by a lack of interaction with peers or the instructor, such as the lack of student collaboration online, the lack of social context cues, or their
being afraid of feeling isolated in online courses” (p. 20). This again was perceived to be a key contributing factor in student attrition and failure in conventional print-based distance courses. Today, the relatively high ICT access amongst tertiary students, teacher trainees and urban teachers contrasts with the much lower access in secondary level education. At the same time, online collaboration and interaction are acquired skills requiring practice and guidance. In terms of instructional and educational design, USP distance education should provide specific support and guidance to both staff and students during course design and delivery so that more interactive and effective collaborative learning experiences can be facilitated that increase motivation and engagement. But USP should also seek to encourage curriculum development in the region so that secondary students and teachers can earn more experiences in online social interaction and collaboration earlier on, thus preparing them for more structured online learning activities once in tertiary and distance education programmes. The survey results indicate that local, national and regional school networks or ‘schoolnets’ would also help prepare students for the experiences of ICT-based collaborative learning.

A third factor for interpretation of the survey findings concerns students’ perceived “lack of academic skills in such areas as writing, reading, or communication” (p. 20). With over 13,000 languages in the Pacific region (Pawley, 2003), English (the official language of USP) is not unusually the second, third or even fourth language used by distance students. Thus, language skills support is vitally important and, given the high level of ICT access for tertiary students, more direct and innovative language learning resources could be made available online for USP distance learners. At the same time, the diverse range of language skills must be factored into education design in terms of student workload, the selection of online activities and social interaction moderation. Many survey respondents emphasised the need for locally-relevant learning materials, and localised content was voted the second most beneficial ICT activity. Forming local, national and regional school networks would help to accelerate ICT-based content development with tools, resources and support for collaborative content development. In addition,
the option to localise the learning management system’s interface into the first language (or second, if a first is unavailable) would provide additional support for online students.

A fourth factor concerns respondents’ perceived barriers to online learning due to their “lack of technical skills such as fearing new tools for online learning, lack of software skills, or their unfamiliarity with online learning” (Muilenburg & Berge, 2005, p. 20). This barrier was consistently raised as a priority numerous times by almost all survey respondents, and strategies to address this factor must have a broad reach, as discussed above. Rural students in particular – and the teachers that are expected to prepare them - are impacted by the lack of exposure to ICT, as the survey shows. Thus, on arrival at USP, rural students will be much less likely to have the requisite ICT skills. USP can address this barrier by providing improved induction and training that targets (rural) students most in need – both face-to-face for the distance students that visit regional campuses, and in online formats for flexible access. Simple, clear interface designs should be used for online courses delivery, in order to reduce the steep learning curves. Importantly, lecturers and tutors must also have the requisite technical skills and the support to solve basic IT problems that their students will ask them for help with. Wherever possible, information systems must be automated and integrated to reduce student disorientation and administrative overheads relating to passwords, login information and resource access.

The fifth factor concerns learner engagement in online learning, including the tendency to “procrastinate, choose easier aspects of an assignment to complete, or feel the online learning environment is not inherently motivating” (Muilenburg & Berge, 2005, p. 21). Well-designed distance learning materials will tackle this issue head-on inasmuch as motivation for distance learners is a crucial determinant in student performance. For ICT-based delivery, USP must address this issue with improved instructional design that engages learners with authentic, problem-based learning and student-centred approaches to assessment. Improving student support through capacity development with USP staff is also vital. The survey results suggest that ICT may be inherently motivating for many students, but distance education materials also require
improved teaching support, as well as careful design and holistically-planned, programme-wide structure. Innovative instructional design is in this sense, the key force of change and improvement in teaching and learning during the transition to more ICT-based course delivery.

The sixth factor concerns support for studies, and “whether a lack of time or support from family, friends, or people in the workplace causes barriers to their online learning” (Muilenburg & Berge, 2005, p. 21). This factor draws on a number of aspects of the survey findings, particularly the section addressing the top ICT challenges. On one hand, providing adequate learner support is a key determinant in student performance. USP can do more to develop its mentoring, facilitating and coaching support services. But a broader issue, especially in the developing context of the Pacific, relates to fostering an “ICT culture”, and engaging in awareness-raising about the benefits of ICT within the community. Once the benefits of ICT can be demonstrated, and basic ICT literacy begins to be demystified, the uptake of ICT and its application in schools and communities will start to grow.

A seventh factor concerns cost and access to ICT. This was a priority concern across the board in the survey results. Efforts to address this issue will require systemic change, top-down policy support, and financial support and planning. Estimates and models of development vary, but to illustrate, with approximately 1,000 schools in the South Pacific region, providing each one with a computer lab of 30 PCs, at $50,000 per lab, an investment of some $50m would be required for basic development ICT in education. When factors such as capacity building, policy formation and project management are factored in, an investment of $10-$100 per child is needed, depending on the size of the country and the available economies of scale. Having said that, ICT has an especially ‘big bang for the buck’ in rural areas because the cost of professional development is reduced and higher quality learning materials can be more easily shared. The high ICT penetration in urban areas also shows that young people increasingly own their own laptops and computers, and bulk discount purchasing schemes managed by the university have been very
successful. This is another area in which local, national and regional schoolnet-style networks can provide organised support, resources, discounts as well as problem-solving.

The final factor analysed by Muilenburg and Berge is: technical problems. This factor concerns such things as “a lack of consistent platforms, browsers, and software, or the lack of technical assistance that causes obstacles to online learning” (p. 21). This issue was also raised consistently by survey respondents in a variety of ways, from slow connectivity and older equipment that is difficult to maintain, to the lack of skilled personnel who can provide support, repairs and upgrades. The solutions proposed involve broader training and capacity-building efforts, from schools to community and vocational settings. From the perspective of USP, a key priority is to maintain standard specifications for PCs, software and upgrade programmes in its dozens of ICT labs across the Pacific. At the same time, training, skills and capacity development programmes are an integral part of the university’s staff development effort.

The survey results discussed here provide baseline data and a range of insights and opinions from experts on issues of concern to distance education planners and strategists. This survey will be repeated annually in order to monitor indicators and provide much-needed information to policy planners. Future surveys will also focus on patterns of ICT usage amongst distance students using ICT, with a more granular focus on how social interaction, collaboration, resource usage, content development, training, and so on, are actually taking place.

Having said that, this survey has a number of limitations worth noting. The survey is biased in that the participants are ICT-savvy and enthusiastic about ICT in education, and are thus more liable to overestimate its importance, and perhaps, as a result, misread levels of ICT access. As can be noted from Table 1, the respondents were also unevenly distributed from across the region. The survey also merges all South Pacific nations into one region, as mentioned, but it is important to keep in mind that the countries of the Pacific vary significantly in terms of size, wealth, infrastructural development and policy innovation.
On a final note, the survey showed strong support for further local and national schools networking efforts, and particularly strong (86%) support for a regional Pacific schools network that would provide and share organisational support for the development of educational ICT in each member country and the region at large. This would also enable a bottom-up approach to building a more effective ICT-based distance education service in the vast Pacific region. This possibility was discussed by Brandjes (2002) but there has been little or no progress as of 2007. It is clear however, that with so many shared challenges and issues, a collaborative approach would bring substantial dividends.

For example, recent developments on the SPIN network, facilitated in part by the Secretariat of the South Pacific are aimed at building a new high-speed Internet infrastructure for the region that will greatly increase access speeds while lowering access costs. This will have important implications for education, particularly if combined with the roll out of the much-touted OLPC project. Future work by the Pacific eLearning Observatory will continue to monitor indicators of the development of ICT in education while building networks of experts and stakeholders that support a regional approach to improving distance education with information and communication technologies.
References


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