PACIFIC ISLANDS FORUM SECRETARIAT

EDUCATION MINISTERS MEETING

Auckland, New Zealand
26-28 November 2007

SESSION EIGHT

**THE ISLANDS OF WISDOM (AND LEARNING);
THE ROLE OF ICT AND DISTANCE MODE IN EDUCATION REFORM IN SOLOMON
ISLANDS: THE CASE OF THE DISTANCE LEARNING CENTRES PROJECT**

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Summary brief

Purpose

This paper presents the case of the EU-funded Solomon Islands Distance Learning Centres Project to illustrate how information communications technology (ICT) can be harnessed effectively to improve education delivery and quality for remote and rural communities through application of the distance mode. A model for mainstreaming and sustainability is presented, with early indictors of community response and performance, and suggestions for expansion and replication using affordable effective ICT solutions.

Objectives of the paper

2. A case is made that such interventions are required to deal with continuing high levels of non-attendance, poor literacy rates and poor access to educational opportunities affecting the young in rural areas.

3. A spin-off project is described, that involves a collaboration of regional and international partners to test the utility of the One Laptop Per Child programme in the region.

Recommendations

4. Ministers are invited to:

(i) request regional and international agencies to work closely with countries to:
        (a) share and replicate best practice and models for harnessing information and communications technology to improve access to quality education, especially for the remote and rural communities, especially through application of the distance learning mode;

        (b) consider introducing models for bridging the rural-urban digital divide in the region, using emerging and lower cost wireless, solar-powered and 'eco-friendly' last-mile solutions, with new VSAT technologies for infrastructure, and low cost laptop

technology such as OLCP.

(c) develop and share repositories of pertinent locally relevant information and education materials; and

(d) design interventions involving ICT for educational use in remote areas to encourage synergy and partnerships that multiply the development impacts

(ii) Consider at the national level:

(a) making electronic resources more available to schools.

(b) introducing simple first steps in creating an eLearning content capacity into curriculum development in the region.

(c) providing wider access to ICT training at all levels, leading to overall capacity development and awareness about ICT and education; and

(d) encouraging coordination with national regulatory authorities to create national ICT policies that enable, rather than restrict, the full potential of modern Internet-based technologies and regional opportunities in improving connectivity for their education systems.

THE ISLANDS OF WISDOM (AND LEARNING);
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Introduction

The title of this paper refers, with apologies, to Robert Graves's famous novel *The Isles of Unwisdom*. This describes the ill-fated voyage of Alvaro de Mendana and his wife Ysabel to the Solomons in the 16th Century where they "found no wisdom". Undoubtedly wisdom was there, but the Spaniards were unable to recognise it.

The focus of education reform in today's Solomons Islands, implemented through the EU and NZAid-funded Education Sector Investment and Reform Programme (ESIRP), is on basic education. The Ministry of Education and Human Resource Development (MEHRD)'s National Education Action Plan (NEAP) 2007-9 starts with a definition of Basic Education and states that the key priority for the Solomon Islands is to achieve universal access to ten years of basic education for all children up to form 3 by 2015. The NEAP continues with an exploration of all the priorities of the education system, including early childhood, primary, junior and senior secondary, tertiary and TVET.

One theme – or challenge - that runs through all of these areas is how best to provide the access to the learners that will meet the targets set by the Ministry. Another major priority for the Ministry is to develop a sustainable system to maintain a supply and adequate pool of trained and qualified teachers – for they are indeed the backbone of the education system. Technical and vocational education and training, including literacy and livelihoods training, is a third priority area, in which both access and quality are in need of improvement and reform.

This paper focuses on the role that distance and flexible learning (DFL) can play, to meet these challenges, using Information and Communications Technology (ICT). It describes the Distance Learning centres Project (DLCP), which after nearly three years has established a network of rural learning centres, which are connecting learners with distributed learning resources and the Internet via VSAT satellite broadband. Using initial results and data from the centres, the paper describes how the DLCP is working with the divisions of the MEHRD to test how DFL can be leveraged in each of the priority areas to improve both the delivery and the quality of education. Issues of sustainability and policy development are also described, with recommendations for consideration by the Ministries of all the member countries.

The DLCP is also piloting means to efficiently mainstream DFL models using innovative technology to reach out to more of the population, especially in remote and rural areas. The One Laptop per Child (OLPC) programme is an example of such a technology that might provide a solution to the problem of rural access. It is specifically targeted at young children and uniquely designed to develop basic learning and literacy skills that are relevant in the modern age. Trials in the Solomons have been designed to inform the region of the potential of the OLPC "XO" laptops, and provide tested models for their subsequent distribution in each Pacific country.

Can ICT in Education work in the Pacific?

There are many different views on whether ICT can work for the education systems in the Pacific Islands countries, and what the priorities should be. Firstly, it is important to look at the different areas where ICT might have a role.

Priorities in many regional countries where ICT could have a role include the need to improve:

- Teacher training and professional development
- Educational resources
- Quality, particularly of basic education
- Participation and access to education

Some arguments that are occasionally voiced against the introduction of ICT in education in the Pacific Islands are that:

- The cost of the infrastructure is too high
- There are other more pressing competing priorities
- The region is not "ready" for the ICT for their education systems
- Too many ICT projects have failed
- The introduction of ICT in education requires curriculum reform, large scale training of teachers and burdensome provision for technical support

We will return to these questions after looking at current research findings and statistics, and the experience of our case study; the DLCP project.

Participation rates

As mentioned above, the NEAP places emphasis on universal access to education. This is common across the region and it is appropriate to look at participation rates.

Table 1 shows statistics gathered by the Secretariat of the Pacific Community (SPC), with their following commentary:

"…Despite the favourable developments in recent years, the position of many Pacific island countries in terms of educational performance remains among the poorest in developing countries. For example, according to recent population statistics, the Pacific population in the age group 6-17 years is estimated to be over 2 million - most of this in PNG. More than half that group is 'not at school' with over 90% located in rural areas or outer islands. For the seven PICT[1]'s included in Annex II, there are more than 1.7 million young people in the 6-17 years age group with 920,000 or 53% not at school. For the 2000 PNG census, more than 717,000 young people never went to school and 47% were females.

For an average medium Pacific island country, we look at Kiribati figures from their 2005 census of population and housing. Over half or 58% of total 2005 population of 92,533 is below the age of 25 years with a median age of 21 years, making Kiribati one of the youngest populations in the Pacific. Approximately 30% or 27,393 of total population is in the age range 6-17 years of which 46% or 12,689 is located in North and South Tarawa, seat of the national capital. That means more than 50% are dispersed over the rural and remote communities covering an ocean area of 3.5 million square kilometres. 13% or 3,557 of the 6-17 year old population are not at school. Other than Tonga with no children in the same age group 'not at school', it is typical to find a significant percentage of 'children not at school' in every other PICT, especially in the larger Melanesian countries…"

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[1] PICTs – Pacific Islands Countries and Territories

Table 1: Population 6-17 years for selected PICs by Status of School Attendance

| | Total Population | Population - 6-17 years | | | | |
| | | | | | Not in School | |
		Total Pop 6-17	In School	Total*	Drop-out (P)	No Schooling
Total	5,819,752	1,719,882	765,861	920,128	167,894	747,159
Papua New Guinea (2000)						
Total	5,190,786	1,531,661	633,768	866,138	148,514	717,624
Male	2,691,744	809,779	340,105	452,645	77,546	375,099
Female	2,499,042	721,882	293,663	413,493	70,968	342,525
Solomon Islands (1999)						
Total	409,042	124,131	75,444	46,583	17,483	27,871
Male	211,381	64,640	40,128	23,358	8,716	13,985
Female	197,661	59,491	35,316	23,225	8,767	13,886
Kiribati (2005)						
Total	92,533	27,393	23,802	3,557	1,067	928
Male	45,612	14,027	11,822	2,192	718	576
Female	46,921	13,366	11,980	1,365	349	352
Cook Islands (2001)						
Total	18,027	4,200	3,641	559	11	205
Male	9,300	2,202	1,898	304	6	96
Female	8,727	1,998	1,743	255	5	109
Nauru (2002)						
Total	10,065	2,875	1,933	942	87	529
Male	5,136	1,514	991	523	62	304
Female	4,929	1,361	942	419	25	225
Tokelau (2001)						
Total	1,537	449	404	45	2	2
Male	761	231	204	27	2	2
Female	776	218	200	18	-	-
Tonga (1996)						
Total	97,762	29,173	26,869	2,304	730	-
Male	49,611	15,258	13,904	1,354	420	-
Female	48,151	13,915	12,965	950	310	-

Source: Latest population census of each Pacific Island Country

Note: * Total includes those who droped out of high school and those with education status "not stated"

(P) Droped out after primary school

In the Solomons we can see that of a population of about 410,000 there are 124,000 (30%) in the 6-17 year age group, of whom 40% are not at school. In rural areas, the non-attendance rate is much higher.

Basic Literacy

Basic literacy is the essential foundation for an education. The UN Human Development Report for Solomon Islands (SIHDR) found from a 1991 survey and the 1999 census that the overall adult literacy rate was 69% for males and 56% for females, and that if the semi-literate were included with the literate, the overall literacy rate would be 62%.

Table 2 (source : SIHDR)

Figure 3.5: **Adult literacy rates, male and female, 1999**
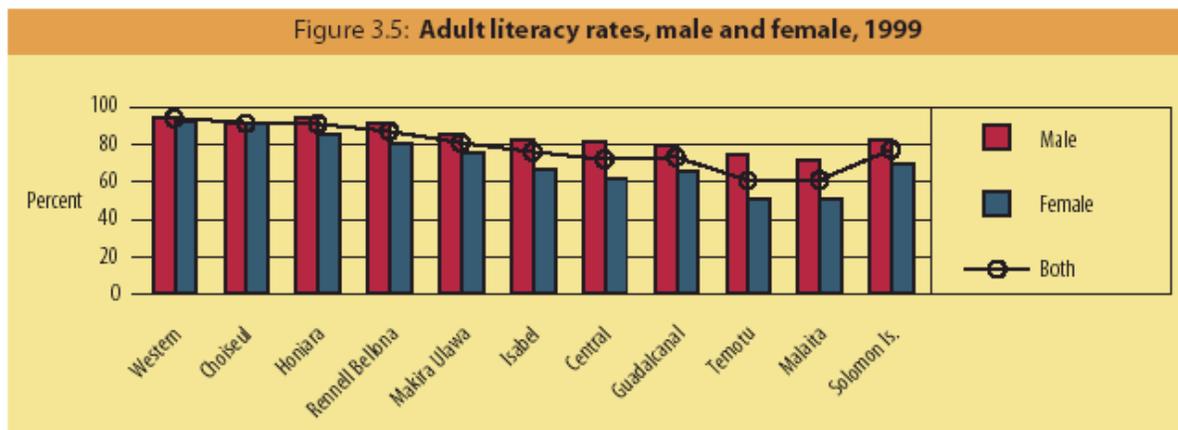
Source: Solomon Islands Government Report on 1999 Population and Housing Census.

Figures vary. A report by the Coalition on Education Solomon Islands (COESI) in collaboration with the Asian South Pacific Bureau of Adult Education (ASPBAE) in Oct 2007 (Solomon Star, 30th Oct) has suggested that the 1999-based results should be abandoned. They found from a smaller sample taken in Honiara and Malaita Province that the literacy rate including semi-literate was only 59%. Fully-literate rates were far lower – only 17% overall and only 7% if the capital Honiara is excluded.

The COESI figures for youth (15-19) are interesting because although they show a higher than average fully-literacy rate (26%) the fully illiterate rate is much higher than with older people. Thus, if a young person is not literate, they are more likely to be totally unable to read/write than partially. The figures again show the marked gender difference, with girls far less literate than boys.

It appears that the definition of semi-literacy may be important when interpreting the results of such surveys, but the general picture is that literacy is a much worse problem than generally assumed. COESI make some recommendations[2], of which some have been extracted and listed below:

1. A second chance education strategy should be developed for out of school youth and adults incorporating literacy, vocational and life skills;
2. No child should be excluded from basic education on the basis of geography;
3. Special effort should be made to improve opportunities and access for girls;
4. A policy of continuous improvement of participation of young people in learning should be adopted, with reference to the quality and relevance of education to people's lives, community commitment/awareness, infrastructure, reciprocal arrangements between learning institutions and communities, and other areas of importance.

Survey of ICT in Education

The University of the South Pacific (USP)'s *Pacific eLearning Observatory*[3] (PELO) has been established in 2007 at the Centre for Educational Development and Technology

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[2] Note that the data and commentary in this paper is based on the Solomon Star newspaper article, and should not be quoted without reference to the actual COESI report

[3] www.usp.ac.fj/pelo

to provide strategic information on the actual status of ICT in the region's education systems. In line with practice elsewhere (Europe's HELIOS project, UNESCO's Bangkok office and the African Information Society Initiative's ICT surveys) it is recognised that having a current and accurate picture of the demand, needs, issues and performance of ICT in education is essential if such introduction is to be managed successfully.

In 2007, the PELO carried out a survey in which 60 ICT and education experts in 12 USP member states were canvassed on their opinions of ICT in education, its current status and the perceived challenges to further development and any key developments. An online system was used to collect the responses. The report of the findings, by Dr. Robert Whelan, is to be published this year[4]

The access issue

The second of the UN Millennium Goals tell us that we should achieve universal access to primary education by 2015 so that all boys and girls complete a full course of primary schooling.

Access to education may be limited for many reasons, such as cost, inadequate provision of education facilities and services, lack of prioritisation by parents (esp. for girls) or lack of communications and access to resources and supporting services. This paper focuses on that latter, and the major issue that affects it, namely connectivity, and the applications that can be run over it, especially distance learning.

Distance learning is about connecting learners with distributed resources. In order to connect learns with distant tutors and/or learning materials, the Pacific Islands has to overcome the access issue, which is also one of digital divide.

Distance and flexible learning is becoming more mainstreamed around the world, with the globalization of education. The Pacific region does not differ in this respect; indeed with the scattered island populations with concentrations of resources and education provision in the main centres, one might conclude that DFL is of particular importance as a means of delivery of education services.

For instance, the Australian National Training Association has studied[5] the impact of TVET policy on the uptake of DFL and one conclusion of the study is that that "*Australia should not seek to avoid the globalization of education and training on the basis of geographic isolation*". Words of caution are added in the respect of impact on culture and potential imposition of alien values. Education policy makers can consider how best locally relevant provision of DFL services can be maintained.

The Commonwealth of Learning (COL) is one of the leading international organisations that is helping member countries improve access to quality education and training for their citizens. In fact, COL is the only intergovernmental organisation that is dedicated to promoting and delivering distance education and open learning. For a competitive edge in the emergent global economy, Commonwealth governments increasingly seek non-traditional education solutions such as open and distance learning (ODL) to

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[4] Whelan R., *eLearning in the South Pacific: Current Status, Challenges & Trends, Survey findings from the Pacific eLearning Observatory* (2007). Contact Dr Whelan at USP via email whelan_r@usp.ac.fj

[5] *Discussion Paper, Framework for National Collaboration in Flexible Learning in Vocational Education and Training* (ANTA Strategy 2001 Project 17) http://flexiblelearning.net.au

achieve cost-effective, significant education and training results for their citizens. COL plays a pivotal role in this critical growth area.

Throughout the literature and organizational structure of COL one sees the three themes of (1) access, (2) quality and (3) management. COL explain that these are three "pillars" of open and distance learning. The challenge is to manage the implementation of DFL in order to balance access with quality.

Research conducted by the University of the South Pacific's Pacific eLearning Observatory showed, in terms of access to ICT for educational purposes, that:

🞦 Pupils, students and teachers living in rural areas have significantly lower access to ICT than those living in urban areas;
🞦 Tertiary students, teacher trainees, and teachers in urban areas have the best access to ICT;
🞦 Primary and secondary students and in particular rural teachers have the lowest access to ICT.

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 key factor behind low rural awareness of ICT. See Table 3. The survey also showed that an average of 17% of the population of the Pacific region has at least some access to the Internet.

Table 3. PC and Internet access rates for students in primary, secondary and tertiary education in rural and urban areas.	
Group and mode of access: PC or Internet	Value
Rural primary Internet	2%
Rural primary PC	4%
Urban primary Internet	7%
Rural secondary Internet	7%
Rural secondary PC	11%
Urban primary PC	12%
Rural teachers Internet	13%
Urban secondary Internet	16%
Urban secondary PC	26%
Rural teachers PC	29%
Urban teachers Internet	43%
Trainee teacher Internet	52%
Tertiary student Internet	59%
Urban teachers PC	62%
Trainee teacher PC	66%
Tertiary student PC	74%
*Maximum mean estimate	

Connectivity

Accessing reliable, low-cost, high speed internet connectivity in Pacific Island countries and territories (PICTs), the primary goal underpinning the Pacific Plan digital strategy, remains a challenge in many PICTs. The problem is worse in the more rural and remote areas.More than 80% of the estimated 9.15 million Pacific islanders live in rural and remote communities. All PICTs are developing nations. Many have

trouble providing even basic infrastructure and services to those living in rural and remote areas. Linking this population to the global communication village through affordable and relatively high-speed internet connectivity can unlock the socio-economic potential of these communities, as they can participate in knowledge exchange and commerce. Challenges facing rural and remote communities in the Pacific islands region in this respect include:

- lack of access to communications technology for rural and remote areas
- high costs of ICTs and access to ICTs
- digital and communication divide affecting mostly rural and remote areas
- lack of economies of scale to attract better prices and competitive alternatives for acceptable service levels
- lack of technical expertise and human resource training opportunities
- restrictive regulatory environments, with many PICTs signing exclusive licenses with single telecommunications companies for as long as 15 years

The situation may improve quite soon. Member countries of the Forum have been advised recently (2007) on significant developments on regional connectivity. SPC have announced the Pacific Rural Internet Connectivity System (Pacific RICS) which will provide a low-cost VSAT solution targeted at rural communities, and the South Pacific Islands Network (SPIN) which promises to connect member countries with high-capacity submarine optical cables. This must be implemented hand in hand with regulatory reform, so that the benefits of these great increases in landed connectivity can reach the rural areas to increase access and lower prices.

In the Solomon Islands, the situation is quite marked, with up to 80% of the population living in rural areas. The Solomon Islands is one of the poorer countries in the region and is also recovering from ethnic conflict. It is now firmly engaged in confidence and peace building measures. Good communications, access to information and sharing of information are a vital to rebuilding the peace and promoting development. However, commercial telecommunications services are only available in the capital and a small number (10-15) rural towns and locations. The exclusive provider is slowly but steadily expanding it's mobile coverage. However, at current rates of penetration it will take a long time before the majority of the population has access.

Broadband Internet is available only in the capital (Honiara) and the second town of Gizo, where new wireless access is also provided. In Gizo, this extends radially outwards with a potential maximum range of over 50km. Typical costs for a private 128kbps, 1GB ADSL account are about USD 120 per month. VSAT access in rural areas, where possible, costs in the order of USD 4000 p.m. for a 256/64 CIR connection.

In other areas – most of the rural areas – there is no commercial ISP service. However, a community-based non-profit operator, the People First Network (PFnet)[6], has since 2001 established a network of some 30 or more rural "email stations". These are run by the communities and use shortwave (HF) radios with modems to exchange mails with the base station in Honiara and outward to the Internet. Various information sharing services are operated over this network (In Isabel Province, the UNDP has matched each of seven PFnet email stations with community FM radio and is engaged in a pioneering experiment in rural e-government).

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[6] www.peoplefirst.net.sb

From 2006 onwards, the first of 9 distance learning centres of the DLCP started to come online. This will add another 9 rural Internet access points, but with full broadband achieved via VSAT technology. The DLCP is, as is described below, demonstrating how each of these can be extended at low cost to surrounding facilities such as schools, using terrestrial Wi-Fi.

Locations of PFnet HF email stations (Sept 2007)
Some of the "confirmed" sites are now deployed

Quality of service (QoS) is an issue that goes hand-in-hand with connectivity and is affected by the regulatory environment. For instance, synchronous Internet-based communications tools and interactive platforms are increasingly common in DFL delivery. The restrictions on voice-over-Internet (VOIP), that some exclusive license holders impose on their customers, does not sit easily with these needs. For instance, the new VSAT network established for the Solomons distance learning centres allows these tools to be used very effectively – as long as the participants are within the DLC network or in overseas countries where VOIP is not restricted (most larger developed economies). However, the Ministry in Honiara cannot effectively use these tools to interact with the rural centres, because it has to communicate over the national ISP's networks. This issue can be sorted out as the Ministry has a good working relationship with the ISP, but is mentioned here to highlight the need to integrate these needs with the national ICT policies.

Background to the Distance Learning Centres Project (DLCP)[7]

In 2002, the People First Network and the University of the South Pacific's Honiara Centre obtained a grant from the Pan Asia ICT R&D programme[8] to test the utility of ICT to improve access to distance education in rural areas. Ten USP students in the rural village of Sasamungga, Choiseul Province, studied USP course modules under remote supervision and tutorship using the PFnet email system. These trials were evaluated by MEHRD and the recommendations were that a national pilot of distance learning centres should be included in the sector programme ESIRP, which was then being formulated.

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[7] Project websites www.peoplefirst.net.sb/DLCP and www.schoolnet.net.sb

[8] Funded by IDRC, UNDP-APDIP and APNIC: http://www.idrc.ca/panasia/ev-9609-201-1-DO_TOPIC.html

Students studying via distance using PFnet, 2002

The Ministry of Education published in 2004 their *Education Strategic Plan 2004-2006 (ESP).* This Plan formed the basis of the reform process currently being implemented under ESIRP. The ESP placed particular importance on making education more relevant and accessible, especially to the 84% or so living in rural communities, and noted:

"*Education must be available to all, regardless of gender, ethnicity and socio-economic background. In particular, basic education must be accessible to and be accessed by all school age children in Solomon Islands. Likewise, adults should have access to further education and training to enable them to develop skills for employment or to broaden their knowledge.*"

The plan also recognised the need to address the problem of untrained teachers, who are estimated to account for 19% of primary teachers and 16% in Community High Schools (CHS). With the focus firmly on basic education, the Ministry also needs to find more efficient local solutions to tertiary education, as the costs of sending students overseas to study are increasingly being seen as disproportionate.

For these reasons, the Ministry has decided to embrace DFL across many of it's programmes, and is addressing the access issue in three ways, via ESIRP:

a) By funding the development of a Distance Learning policy/strategy for formal and non formal education;
b) By funding a pilot project to establish 9 Distance Learning Centres in rural secondary schools;
c) By implementing a joint USP/SICHE Feasibility Study to examine options for establishing a fourth campus of USP in Honiara. Once developed this facility will rely heavily upon distance learning.

The immediate goal was to maintain the delivery of education services during the post-conflict rehabilitation period from 2004 to 2006. The long-term goals were to plan and take action over 15 years to:

- Provide equitable access to quality basic education for all children in the Solomon Islands;
- Provide access to community, technical, vocational and tertiary education that will meet individual, regional and national needs for a knowledgeable, skilled, competent, and complete people;
- Manage resources in an efficient, effective and transparent manner.

Objectives of DLCP

The Distance Learning Centres Project was started in Dec 2004 and has now been running for now three years. The overall objective is to improve access to quality education and training for all, through the distance mode using information and communications technologies (ICTs).

Specific objectives are:

- To establish distance learning centres in rural community schools
- To establish a VSAT network to connect the schools and their communities
- To facilitate the delivery of DFL by education providers
- To test and demonstrate how distance learning can help deliver, improve, and support a wide spectrum within the education system. Areas include:
    - Teacher training and professional development
    - Literacy
    - Bridging studies
    - Technical and Vocational Education and Training (TVET)
    - Curriculum delivery
    - Tertiary studies
    - Continuing education
    - Open learning

The project is also helping the Ministry to develop a DFL policy and is testing new technologies that will help the Ministry to expand the network affordably.

Description of the DLCP "model"

The project is being implemented by the People First Network (PFnet)[9], building on their experience and proven models for sustainable community networking. By November 2007 the DLCP has established eight of nine learning centres, each one hosted by a rural community school in each province.

Site selection and management
The locations were selected by committee after candidate schools were invited to make submissions. Consulting the community and giving them lead roles in managing the implementation of such projects is essential for their sustainability[10]. The sense of community ownership is imperative. This partnership is cemented with a local management committee, as shown in the diagram below.

Supervisors
The centres are manned by full-time "Supervisors". The Distance Learning Centres require skilled Supervisors whose role is to manage and maintain the technical equipment, oversee the operation of the centres, assist users such as teachers, students, other groups, individuals to use the facility. The ideal profile of a Supervisor is an experienced teacher with good awareness of development issues and experience with distance learning, who also has good computer and Internet literacy. Champion teachers are also identified and trained. These teachers promote the potential uses of the centres to the school and act as technical mentors for other teachers.

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[9] PFnet is an activity of the Rural Development Volunteers Association (RDVA), a partner agency of the Department of Provincial Government and Constituency Development

[10] See USP-JICA research on PFnet at www.peoplefirst.net.sb/research
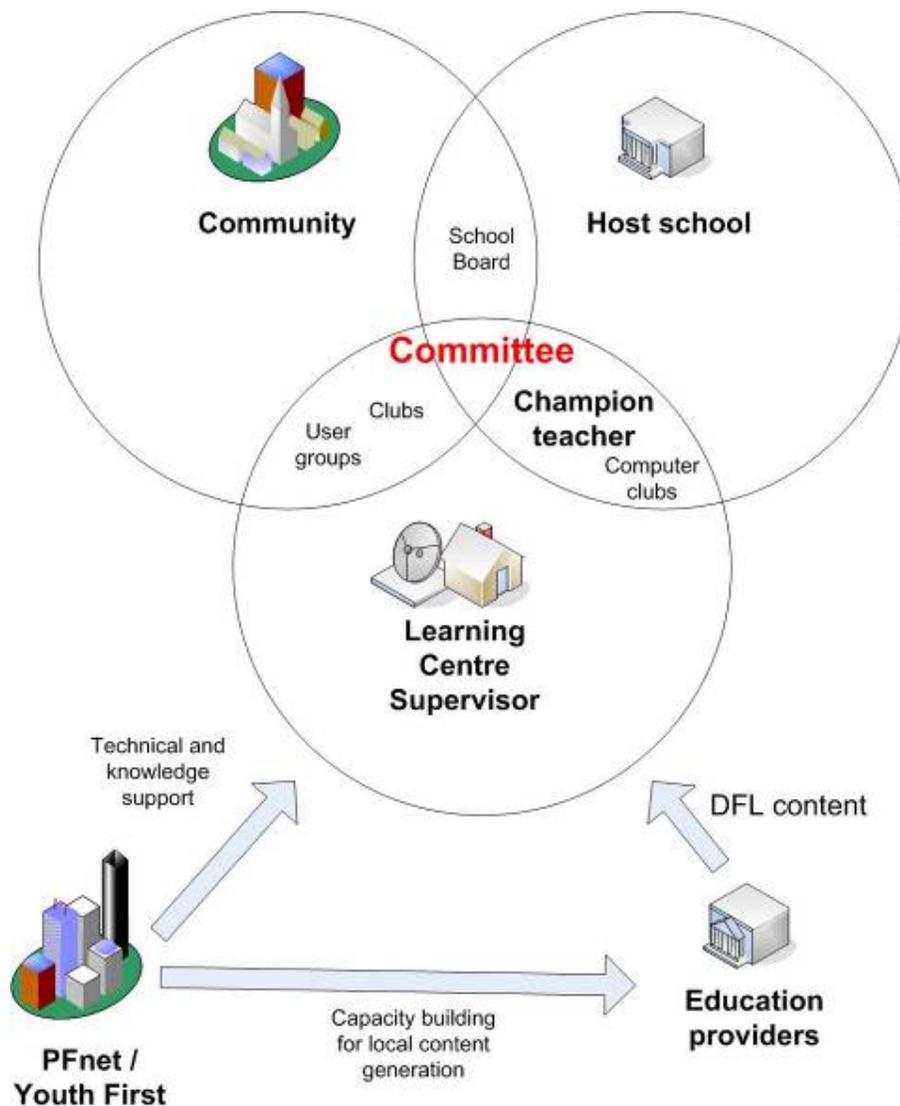
<u>Equipment</u>
Each centre is solar powered and has six laptop computers, printers and scanners and full-time supervision to help learners use the centres. The computers are configured with special "DeepFreeze" software to main their integrity and reduce maintenance, and are preloaded with a wide range of educational resources, too many to list here but including the UNESCO ASEAN schoolnet resources, UNDP financial literacy modules, Microsoft Encarta, etc. The SchoolNet portal set up by the project (www.schoolnet.net.sb) has links to online resources.

In the evaluation of the 2002 trials with PFnet, it was realized that better connectivity would be needed than HF radio email and thus a new broadband network has been established for the centres using VSAT satellite technology sources by the project's solution partner Our Telekom (formerly Solomon Telekom). This allows a full range of Internet-based distance learning applications to be used, allowing interactive "satellite" tuition sessions to take place between remote tutors and learners.

Distance
Students

Instructor

LMS server
Course server

The Internet

online
courses
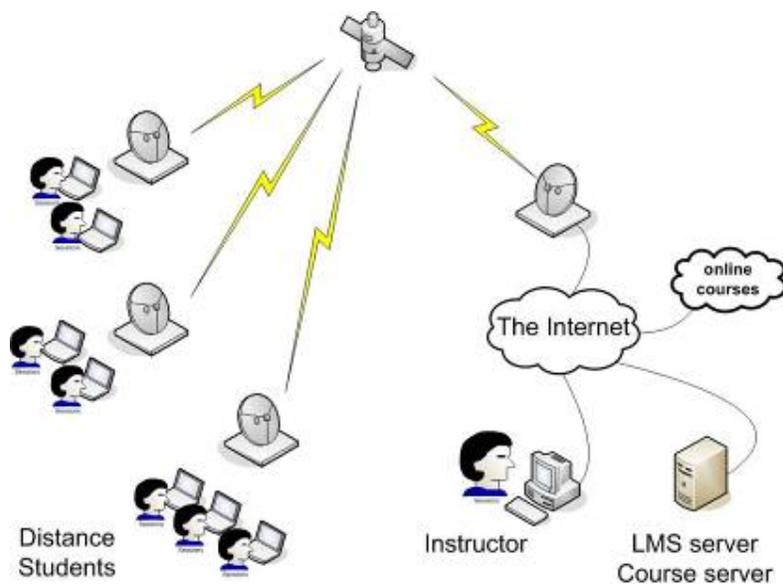
Protecting our children

With the broadband come concerns about inappropriate use. In order to protect children and others from exposure to inappropriate materials, the network will is fully screened using a sophisticated "content filter". This filter (a box of electronics) is based at the VSAT hub in Australia. Such usage policies work best when supplemented with awareness and training to empower communities to supervise their children.

General information and communication services

The centres are also open at certain times each day for general "Internet Café" use, providing the whole community with access to improved communications and services. As has been experienced with the PFnet email stations, the communities will benefit in many ways, beyond formal education. This is owing to the characteristic of ICT that creates synergy. Although intended primarily for education, the ICT acts as a "development multiplier" by also improving services in other sectors. For instance, the ANZ Bank has signed an agreement to host a rural bank agency at one of the centres. Other development benefits resulting from improved networking may include increased women's participation and support for farming and livelihoods. Linking in as many diverse services as possible is essential to the sustainability of the centres.

The centres are managed by the host schools in partnership with their communities, and are open to all people wishing to continue their education, including through technical and vocational training (TVET). These partnerships will ensure full access for all the communities, and are essential for the sustainable operation of their centres and their appropriation by their intended beneficiaries.
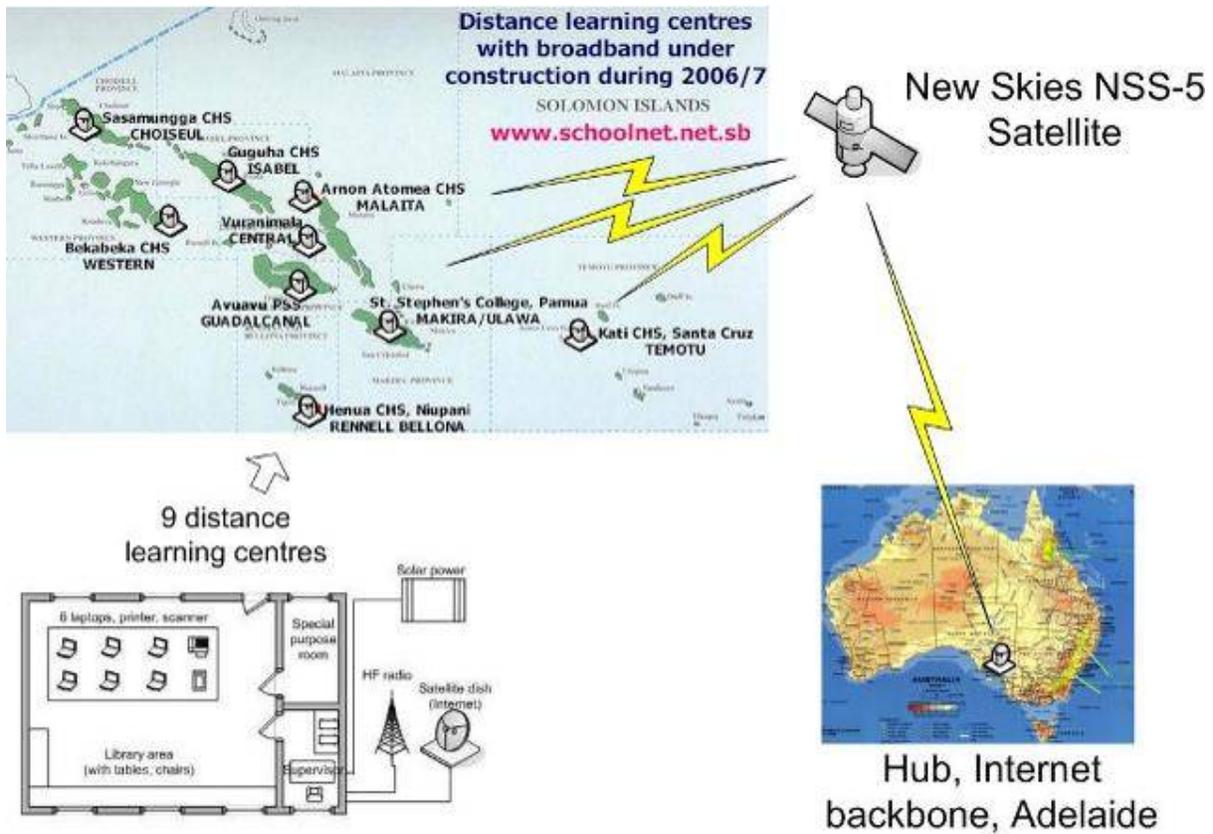
Educational applications

<u>University of South Pacific (USP) and Papua New Guinea (UPNG) Open College</u>
Both of these organisations have locally relevant distance mode programmes including technical, bridging and tertiary degree-level study. USP now have 350 (mostly print-based) distance education courses, a new Moodle learning management system (DLCP has also deployed a Moodle LMS), and aims to have 600 (75%) of their courses available in ICT-based distance mode by end of 2010. USP courses are well known to Solomon Islanders, and thus demand is pre-existing.

USP is already piloting enrolments at more than two of the current DLCs and has collaborated to train the DLC Supervisors to facilitate enrolment and study via distance.

UPNG Open College have a full spectrum of courses that are also very locally relevant, that link basic literacy training through community studies with technical and vocational content focusing on livelihoods, through to tertiary and degree level studies. The latter includes foundation year for technical/scientific subjects such as nursing. UPNG has signed an MOA with the Solomon Islands Colleger of Higher Education (SICHE), to open an office and base an instructional designer there. They have also held discussions with DLCP and intend to make their distance programmes available via the DLCs.

The Ministry has recognised that there is considerable scope to improve the efficiency of training by providing local opportunities for learners to study via distance, especially with tertiary studies, where otherwise the learner must spend years overseas at great expense.

The demand is also high in the community for study, especially USP courses which are the first to become available through the DLCs. Enrolments are being recorded with teachers and members of the public self-funding; however there are also reports that many potential learners are not able to enrol because of lack of finance. Sources of scholarships suited to distance-mode studies need to be identified and made available through the Ministry and the DLCs.

Teacher Professional Development
The School of Education (SoE) is considering the incorporation of distance support, using DLCs, for teachers in training under the current programme of SoE. In this programme, 1800 teachers in batches of 250-300 will receive a six week training course in Honiara followed by in-school training supported by provincial workshops. Three short training courses are to be studied during the in-school component. Work is currently underway to adapt these self-learning courses to include interactive activities and to pilot this as soon as possible. Teacher trainees near the centres can be given computer training and then receive mentoring and tutorial support concerning the short courses studied in service.
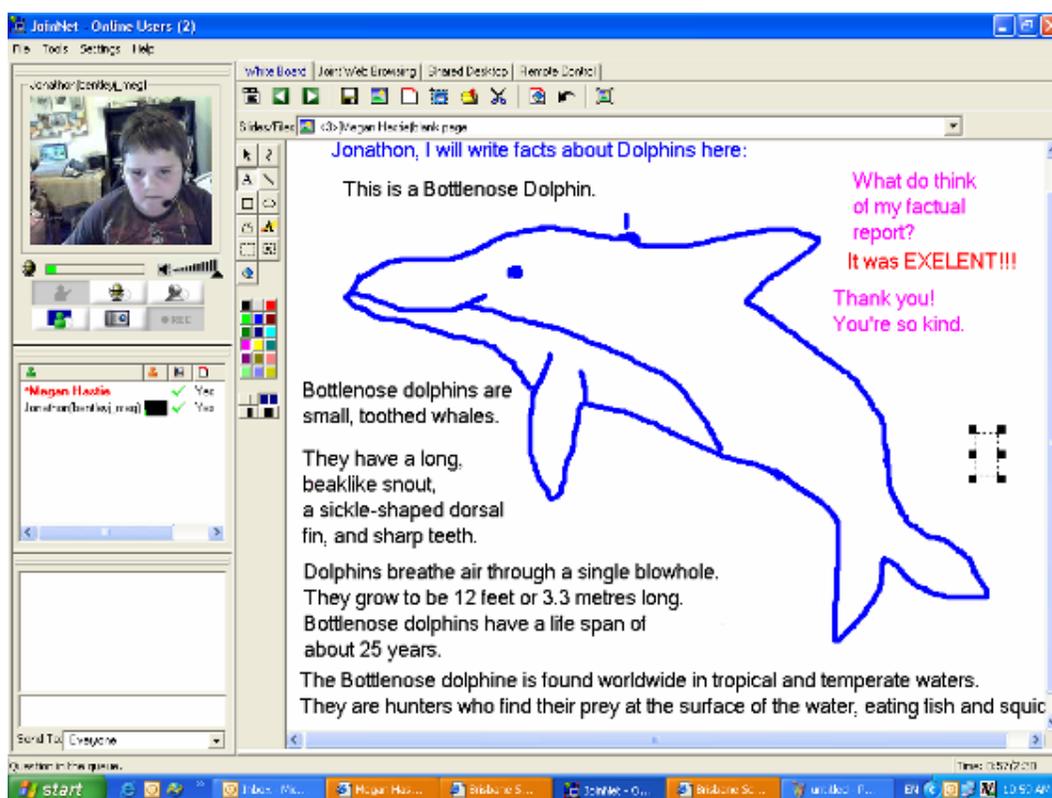
An online synchronous tuition platform used by the DLCs[11]

The opportunities to upgrade teachers via USP and UPNG OC courses including degree level, are great. The cost savings over sending someone overseas are great. UPNG degree courses can be studied in 3 years for as little as AUD $3,000.

TVET
A distance learning strategy for TVET has been developed by DLCP in association with the Solomon Islands Association of Rural Training Centres (SIARTC) and the country's

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[11] Made available in collaboration with specialists Professor Nian-Shing Chen and Laurence Quinlivan of the National Sun-Yat-Sen University of Taiwan, and Megan Hastie from Brisbane School of Distance Education

main TVET teacher training college at Vanga. Reference was made to the Ministry's TVET Policy, which encourages the TVET sector to extend their services to their surrounding communities. In line with this, the centres will work closely with nearby rural/vocational training colleges (RTCs):

- To support in-service trainees of Vanga teacher training course;
- To train a Champion Mentor with the skills to support Mentors in RTCs and trainee teachers using Internet technology.
- To support RTC teacher's core subject knowledge;
- To provide skills upgrading opportunities for teachers;
- To provide IT training for students and teachers;

One potential is to facilitate sharing of specialist knowledge between centres. For instance, a beekeeping or chicken-farming specialist at one training centre can provide technical support to other RTCs so that they can offer that training. Two example online courses have been developed for these topics[12].
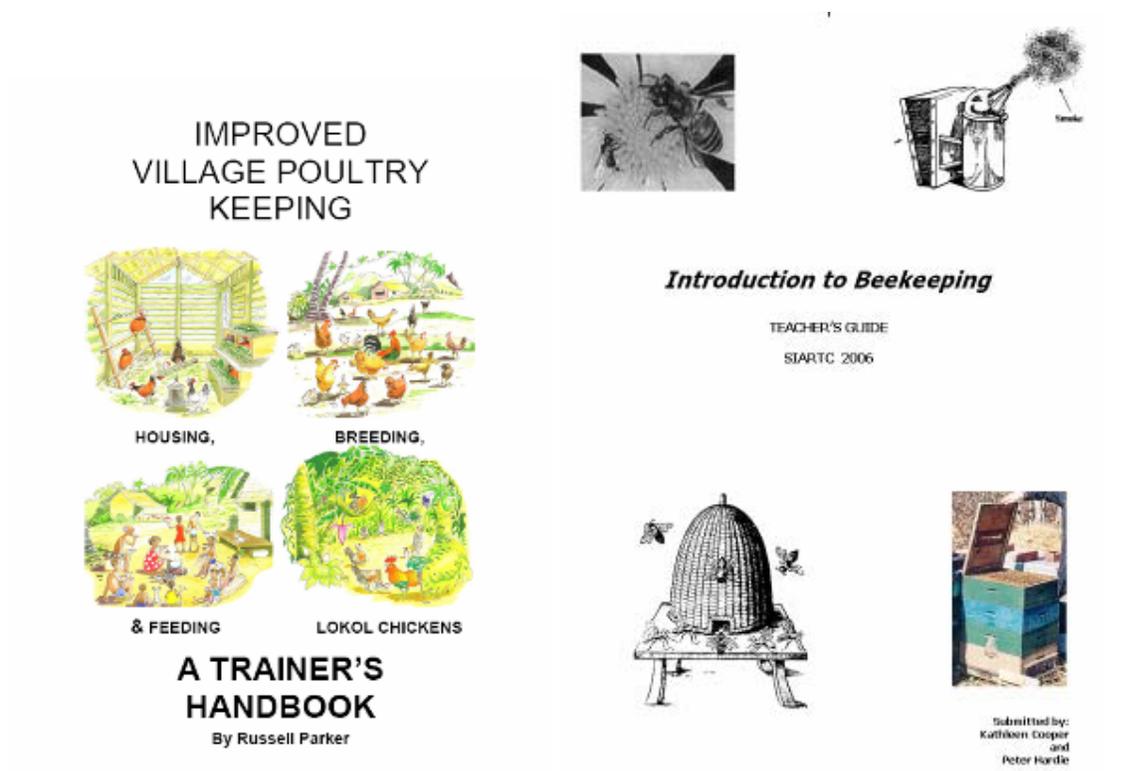
Examples of local content made available at the RTCs

DLCP has worked with NGOs such as Kastom Gaden Association so that technical specialists can use the distance learning facility to support remote teacher/trainers.

One example of such an arrangement has sprung up at the Guguha DLC, where the Supervisor has responded to requests from local farmers and helped them organise the Guguha Farmers Association with a view to accessing technical support, training and information on crop cultivation, diversification and markets. The proposed arrangement is that technical experts can provide distance training for the host

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[12] www.schoolnet.net.sb/courses

school's agriculture teacher, who can then act as a local tutor and resource person for the farmers.

Another possibility is that the centres can help RTCs to expand their curricula by facilitating franchise-like arrangements with regional vocational education providers such as Fiji Institute of Technology. The RTCs would then provide the vital mentoring and face to face component.

In line with policy, these services could then be extended to members of the community who wish to study.

Under a new agreement signed by the Ministry, European Union and NZAid in April, a major TVET programme is due to be implemented starting next year. The potential of distance learning will be explored and developed further under that programme.

Literacy
A workshop in June 2007 was jointly organised by Commonwealth of Learning (COL) and DLCP to investigate how literacy, TVET and DFL can work together. This highlighted the potential for distance support for literacy training. Some of the outcomes were:

- A new literacy network was created, with a website and email list;
- The Ministry has committed itself to developing a Literacy Policy;
- Distance support for training of literacy trainers will be explored;
- Literacy organisations and COL will continue to work together to develop literacy learning materials;
- Solomon Islands will apply to join the Virtual University of Small States of the Commonwealth.

Curriculum
DLCP has worked closely with the Curriculum Development Centre (CDC) to explore the potential of eLearning linked to the national curriculum via the DLCs. With the advent of ICT and computers in schools, which is happening sometimes without any guidance (i.e. donated computers direct to schools), CDC needs to consider how it can take more of a driving seat in the use of the ICT to improve curriculum delivery and integrate this into curriculum development.

Overall, this would require a significant effort. However, simple first steps can be taken, such as piloting the use of some materials in electronic "e-book" format, and learning from participation in the One Laptop per Child trials (described later in this paper). A curriculum development officer has been named the focal point for this activity.

Sustainability

Sustainability and an exit strategy for DLCP are of special concern to the Ministry.

The DLCP benefits from being part of a sector-wide programme. This means that it is easier to coordinate application of the DLC network with the various divisions of the Ministry, and to tie these applications to policy. This is expected to make a significant contribution to the sustainability of the centres.

The Technical Working Group on DFL and eLearning (TWG) has been created to fulfill the coordinating role. The TWG's objectives include the development of a DFL and

eLearning policy/strategy and a DLCP exit strategy. This has been making steady progress with 3-weekly meetings.

The TWG is a very important mechanism for mainstreaming and coordinating developments in DFL across the education system. As a key partner, the DLCP will interact closely with the TWG throughout the remaining life of the project.

The TWG has a number of sub-committees working on specific areas. These include:

- Developing a DFL and eLearning Policy
- Mainstreaming (of DFL and eLearning)
- Developing and implementing an exit strategy for DLCP

The TWG has worked with regional and international organisations. It includes as observers experts from USP, UPNG and COL, amongst others. This has led to technical inputs, such as a COL workshop that was held to provide guidance on policy development, and a similar input from USP's PRIDE programme.

As a consequence, the DLCP has submitted a draft Exit Strategy to the TWG.

The exit strategy is about sustainability. Within this topic we find everything else, including mainstreaming and several kinds of sustainability to be addressed. The general approach is to maximize the usage whilst remaining true to the intended purpose of the DLCs, through mainstreaming (by MEHRD, the wider education system and more generally in terms of rural development) adding linkages/collaborations and through capacity development. It is also important to create a proper institutional basis for the DLCs – considering them as a whole, rather than as individual centres – and for each stakeholder to accept some responsibility.

There are several kinds of sustainability (that overlap to some extent):

- Financial sustainability
- Institutional sustainability
- Human resource sustainability
- Sustainable partnership with community
- Sustainability of the wider environment – national policies etc
- Technical sustainability

The strategy incorporates some key components:

- Include DLC Supervisors positions in the 2009 SIG budget under Public Service
- Develop the business model so that revenues can pay for other operating costs
- Create an institutional basis for administration and on-going development
- Identify and agree arrangements for "ICT" technical support
- Identify and make agreements to provide "educational" technical support
- Create an additional budget line for long term maintenance
- Sign service agreements with USP, UPNG Open College and other providers
- Mainstream MEHRD/SICHE usage of the DLCs (SOE, DEC, CDC, Ministry Divisions)
- Develop partnerships in development with third parties (such as ANZ)
- Link to other national development programmes.

Financial sustainability

In terms of financial sustainability, the business plan balances educational services and computer training with pay-for-use services and linkages to third party applications to maximise revenue opportunity.

Although the centres are not as yet being driven by policy, the community demand is high and in the initial months of operation up to 70% of the monthly bandwidth cost has been collected per month. With the addition of service agreements for education providers and increased demand as local skills grow via training, plus scholarships to increase uptake of distance learning, these early results can be built on. Most centres report that extra computers are already needed. This illustrates the existing demand.

There are also strategic linkages that are showing promise:

- An agreement has been reached with ANZ Bank to open a rural bank agency at Arnon Atomea DLC - a true "partnership in development". The DLC provides a secure room with power and broadband, and the bank agency can then offer full banking services using EFTPOS. Working together, the DLC and ANZ staff can then provide training in Internet banking and financial literacy (using a module developed by UNDP). The service agreement provides a steady significant income for the centre. If replicated and a few other sites, this model could substantially underwrite the operating costs.
- The Chief Health Officer from one province has approached the DLCP with view to developing an integrated health communications system for the province. The is obvious potential for training rural health workers, and the use of Internet –based telemedicine systems to refer cases to experts;
- The Internet access provided by the VSATs can be extended outwards from the centres using wireless "Wi-Fi" technology. This can be used to connect more schools nearby, and even third parties with the DLC acting as a "rural ISP". For instance a mining company has expressed interest in such an arrangement, whereby they pay for a wireless link to a nearby community as part of their social policy and also benefit from the connectivity themselves.

There are a lot of dynamics at play. It is important to listen to demand from the communities and the resulting ideas which the DLC Supervisors are bringing to the table. The project runs annual DLC Supervisors' workshops, where such ideas can be shared and replicated in the other centres.

Human resource sustainability

In distance learning the human element is important. Technology on it's own cannot substitute for some level of local support and face-to-face mentoring. The DLC Supervisors have been recruited and trained to fulfill this role and to work with other "champions" in the school and community. Therefore it is crucial to retain these capacities by providing a proper career opportunity.

Institutional sustainability

This involves identifying a "home" for the DLC network after the project. A suitable home might include a section of the Ministry or an existing or new NGO or external organisation with the required capacities and linkage to the Ministry. This administrative centre should cater also for growth and innovation, and coordinate the educational services offered by the DLCs. The TWG is working on this issue.

How well is it working?

Initial results from online monitoring
The project uses an online monitoring and reporting system to collect usage data. All users are required to register, and can then complete an online user survey on a voluntary basis. This data is an early indication only. Most of the centres have only been open a few months, whereas the educational objectives will take time to be established. The initial main activity and priority is computer training, so that people will be able to use the facility.

Registered users and number of user sessions

	Date open	Number registered users (fairly well reported)	Reported sessions (greatly under-reported)
Pamua	Sept 06	194	1416
Vuranimala	Mar 07	88	709
Guguha	Apr 07	49	219
Bekabeka	May 07	168	879
Henua	June 07	171	397
Arnon Atomea	June 07	106	171
Avuavu	Sept 07	44	40
TOTAL		820	3831
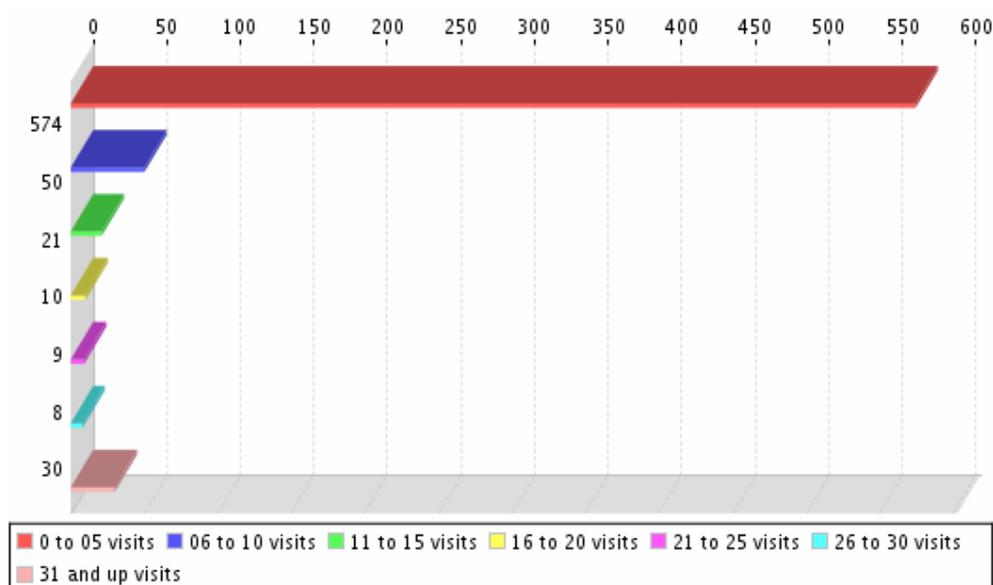
The diagram above shows the frequency of use for the 820 registered users across all seven operational sites. However, the user survey is voluntary and usage is heavily under-reported. The general conclusion to be made is that in a short period, 820 people have made the effort to register at a DLC and become potential users. As they are trained and discover more services they will use the facility more and more.

Usage by Gender (all sites)

	By users	By sessions
Male	562 (69%)	3012 (79%)
Female	258 (31%)	819 (21%)

This data shows unambiguously that the majority of users are still males. Efforts to encourage women and girls to use the centre should be encouraged.

User's main occupation

	By users	By sessions
Builder	15 (2%)	25 (1%)
Church Worker	17 (2%)	97 (3%)
Farming	35 (4%)	140 (4%)
Fishing	13 (2%)	44 (1%)
Government Officer	13 (2%)	15 (>1%)
Health Worker	16 (2%)	13 (>1%)
Housewife	31 (4%)	90 (2%)
Police / Legal Worker	8 (1%)	12 (>1%)
Student - Primary	30 (4%)	60 (2%)
Student - Secondary	371 (45%)	1117 (29%)
Student - Tertiary	26 (3%)	146 (4%)
Teaching/Training	148 (18%)	1772 (46%)
Timber (Logging Worker)	3 (0.5%)	5 (>1%)
Trader / Store/ Employee	2 (0.5%)	12 (>1%)
Other	92 (11%)	283 (7%)
Combined results:		
School students	427 (52%)	1323 (35%)
Teachers	148 (18%)	1772 (46%)
Community & adult learners	245 (30%)	736 (19%)

This data shows that although school students make up 52% of the registered users, teachers are by far the most frequent users. Community people make up a third of the user-base, but on average use the centre less often. This demographic will probably change with time, as the training of community people takes effect, and relevant educational services become more available.

Usage by education level (how educated are the users)

	By users	By sessions
None	15 (2%)	42 (1%)
Primary school	58 (7%)	136 (4%)
Form 1-3	207 (25%	506 (13%)
Form 3-6	329 (40%)	1459 (38%)
Form 7	9 (1%)	14 (>1%)
Rural Training College	16 (2%)	57 (1%)
SICHE	80 (10%)	585 (15%)
Degree holder / higher	28 (3%)	274 (7%)
Diploma holder	45 (5%)	357 (9%)
University undergraduate	18 (2%)	369 (10%)
Other	15 (2%)	32 (1%)

This data tells us that the more educated (senior secondary school, college and those having attended university) are disproportionately using the centre compared to the less educated. For instance, post-secondary school educated people make up only 20% of the registered users but they made up 42% of the reported user sessions.

People with junior secondary education or less make up 34% of the user-base but only 18% of the reported sessions.

However, there is a spread right across the spectrum. Earlier in the report it was mentioned that there is a great potential for using the centre in basic literacy training. This data tends to show that this potential is not as yet being realised and efforts should be made to follow up that application.

Usage by age group

	By users	By sessions
Under 10	1 (0.1%)	0
10-19	291 (35%)	771 (20%)
20-29	291 (35%)	1368 (36%)
30-39	152 (19%)	1265 (33%)
40-49	52 (6%)	354 (9%)
50 plus	4 (0.5%)	5 (>1%)
Unknown	29 (4%)	68 (2%)

70% of the registered users are under 30 years old. This is a common finding in ICT research, with young people being the first to take up the technology.

Usage by main purpose (why they used the centre)

	By sessions
Computer training	765 (20%)
To collaborate with teachers/students	127 (3%)
To study	506 (13%)
For private info and communication	1856 (48%)
None / don't wish to say	577 (15%)

This data shows that in these early days, the main usage (more than 48% of reported sessions) is for private use. However, as the teachers and students are trained and learn more how to use the centre for school work, and as the educational programs are progressively introduced and the Ministry mainstreams it's use of the centre, this should change. The 16% of usage for educational reasons is driven mostly by the people themselves. However, if they indicated they were using the centre for private reasons, when asked to explain further 37% said that they were in fact using the centre for educational reasons (for example, a teacher might be communicating privately with the Ministry).

In summary, the usage data shows that there is an immediate demand from the community and that there is an impact on the learning environment even before the educational applications of the centre are formally introduced. The data also provides a good baseline to measure improvements.

The project can note from the data that less educated, older people and women are poorly represented and efforts should be made to target these groups. In particular, the potential of the centres to assist with basic literacy training should be explored.

USP Uptake
Enrollment in USP distance courses is already available, although as yet there is no official linkage to the Ministry or to scholarship schemes. The first centre to open at

Pamua has reported that after an initial survey where 69 persons registered interest in USP study, thus far 23 enrolments have proceeded including at least one degree-level student studying for a Bachelor of Education (Primary) degree.

A second DLC, Vuranimala, has reported that eight teachers have registered to enroll with USP, and there is similar interest at the other sites. All sites report that funding is an issue, with demand being high amongst the teachers and the community for study programmes to be supported through scholarships.

No	Name	Gender	Age	Occupation	From
	Continuing Education Department				
1	Zachariah Talo	M	30 - 40	Teacher (RTC)	Pamua
2	Meydlyn Haga	F	20 - 30	Housewife	Pamua
3	John Still Sahumane	M	30 - 40	Teacher (RTC)	Pamua
4	Charles Tome	M	30 - 40	Student (RTC)	Pamua
5	Hilda Kaoga	F	20- 30	Teacher (Community Kindy)	Community
6	Mary Jordan	F	20 - 30	Teacher (Community Kindy)	Community
7	Jean Dorin	F	20 - 30	Teacher (Community Kindy)	Community
8	Phyllistus Dadama	F	20 - 30	Teacher (Pamua Kindy)	Pamua
9	Lilly Musi	F	20 -30	Teacher (Community Kindy)	Community
10	Kate Ohou	F	20 - 30	Teacher (Community Kindy)	Community
11	Veronica Ha'ageni	F	20 - 30	Teacher (Community Kindy)	Community
12	Kate Loli	F	20 - 30	Housewife	Community

No	Name	Gender	Age	Occupation	From
	Distance and Flexible Learning Mode				
1	Castro Muaki	M	30 - 40	Teacher (Academic)	Pamua
2	Lorreta Matawa	F	30 - 40	Teacher (RTC)	Pamua
3	Phylistus Polokeni	F	30 - 40	Teacher (Academic)	Pamua
4	Olive Masura'a	F	20 - 30	Farmer	Community
5	Gregory Garopane	M	30 - 40	Teacher (Community Kindy)	Pamua Pri/School
6	Selwyn Wamwea	M	30 - 40	Teacher (Community Kindy)	Makira Weather Coast
7	Peter Usumae	M	30 - 40	Teacher (Academic)	Pamua
8	Anna Usumae	F	20 - 30	Teacher (Academic)	Pamua
9	Allys Flory Tome	F	30 - 40	Teacher (Academic)	Pamua
10	Elizabeth Kuper	F	20 - 30	Student	Kirakira
11	Edgar Takeli	M	40 - 50	Teacher	Waimapuru

USP enrolments reported at Pamua DLC

Other indications of the uptake in education
Other indicators are more anecdotal. Results are provided by the DLC Supervisors in their monthly reports, which they have to present to their local committees and agree on recommendations and actions.

There is some anecdotal information in school usage, across all the sites. It is very interesting to see how each community and host school is responding and initiating

various applications. When this local demand is coordinated with the introduction of national programmes the utilisation can be expected to increase further.

In summary, the host schools are using the centres in the following ways:

- Computer training is the main priority, initially. The DLC Supervisors are trained as trainers, and organise training sessions for teachers and students with the help of the Champion Teachers. Training is also offered to the community. Uptake for training varies but in more than half of the DLCs the training demand is higher than capacity allows;
- Teachers are using the DLC, as planned, to reinforce their classroom teaching. The DLC Supervisors are trained to help them locate suitable resources and plan how to involve the students. Typically, teachers arrange to bring groups of students to the centre where they access materials themselves or have demonstrations using a projector to display a learning resource to the group. One example of imaginative use linked to the (in this case) social science curriculum is using Google Earth to check land usage patterns in the Solomon Islands, to update the information given in their topic books. Another example is the creation of a "blog" website by an English teacher with students contributing material.
- At one site (Avuavu) the school has already (in the first month) been negotiating with the National Examination and Standards Unit (NESU) and the South Pacific Board for Educational Assessment (SPBEA) to introduce an examinable computing studies course for their Form 6. This would be one of the first schools outside of Honiara to offer this subject – effectively overcoming the urban digital divide.
- Students use the centres in their free time and in scheduled time to research information for assignments, etc.
- Teachers are using the centre for administrative purposes, to contact the Ministry. It is planned to link the DLCs with the national education information system (SIEMIS).

Success factors

- Participatory site selection and management. The "bottom-up approach";
- The DLCP was planned and is implemented within a sector-wide programme allowing coordination and mainstreaming of educational applications for the DLCs across the education system;
- The Technical Working Group as a vehicle to tie the DLC network to education priorities and to develop policies that will sustain the usage of the centres;
- Building on proven models, with lessons learned from the People First Network;
- The importance of the human factor; the need for a local human element in distance learning; the use of highly trained technical and information intermediaries and local champions; Supervisors work as a team, helping each other and pooling ideas – the spirit of team work;
- Technical design suited to rural areas, with the computer networks protected to maintain their integrity, regular maintenance available locally with continuous capacity development including for local persons;
- Ability to respond to local demand, and also mainstream applications to meet the national needs of the education system;
- Community ICT as multi-purpose facilities, actively looking for synergies and linkages to increase the utility and impacts. A narrow focus on one application requires a different model, with much more emphasis (and burden) on the central administration;

Extending the impacts of the centres to more communities and sites

The Ministry is looking ahead to expand the DLC network to improve access to educational opportunities in more schools and communities. Consequently, as part of an "educational pilot" component of the DLCP, new and innovative, affordable technologies are being investigated for their potential to facilitate this need. These include:

- Wireless networking to extend coverage of the VSAT network;
- The new breed of low cost, low power laptops, in particular the One Laptop Per Child (OLPC) laptops;
- Adding new DLC sites using the Pacific RICS;
- Community radio "married" to the VSAT access.

Wirelessly extending coverage of existing access points

The diagram below shows how it is possible to extend the coverage of the more expensive VSAT sites using wireless networking. This "Wi-Fi" technology is low cost and does not need professional telecommunications engineers to install and configure. As an example, a wireless bridge can be set up over as far as 50km or more (providing there is line of sight), with the antennas and electronics costing a few hundred USD only (each end of the link)[13]. Thus, one can maximize the benefits and impacts of the initial investment.

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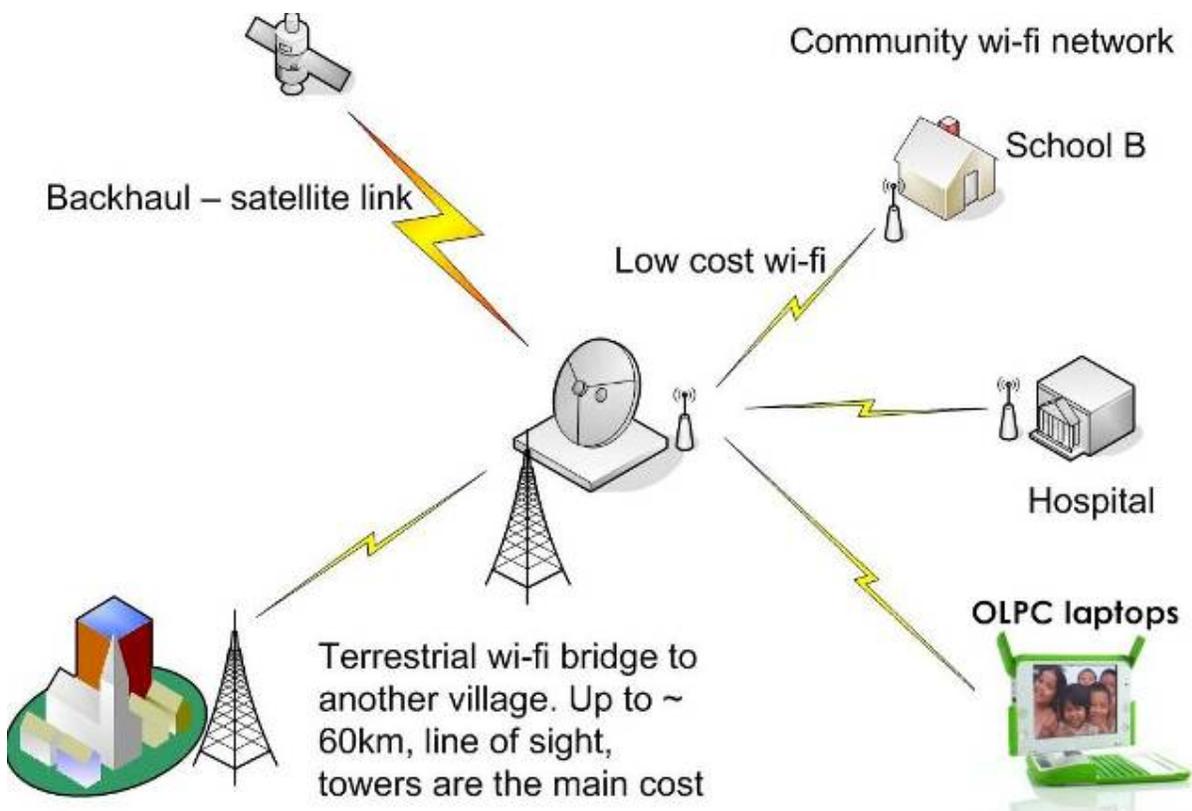
[13] The towers/masts that are sometimes needed for line of sight are usually the most expensive part.

Low cost laptops

Many variants of a new concept for ultra low-cost laptops have sprung up in recent years. One regional expert has identified over 50 different brands. The best of these share the following characteristics:

- Low cost (<USD 200);
- Low power, resulting in electrification requirements and costs being reduced dramatically – solar power to suit one standard laptop could power up to 10 of the low power type;
- Running on open source software – no licensing costs, greatly reduced danger from viruses etc;
- No moving parts (they use flash-ROM for the operating system) and very robust for tropical climates;

Two examples of low cost ROM-driven laptop technology (OLPC's XO laptop and the Ink-Media design

One Laptop Per Child (OLPC) is a world-wide education project that aims to improve the access to basic education for millions of school-age children especially in the developing world. The non-profit OLPC Corporation was started in 2005 following research and development at Massachusetts Institute of Technology (MIT) Media Lab, and is supported by many corporations (i.e. Intel) and aid agencies such as UNDP, which endorsed the OLPC at the World Economic Forum in 2006.

OLPC has created an innovative laptop computer that is specially designed for issue to children to own and use in remote rural places with harsh climates and where there are few power sources. The innovation permeates both the hardware and software design, such that the laptop connects to other laptops in a mesh network, and promotes collaborative activities through applications that can be "shared".

The OLPC Project's characteristics are such that the laptops can be expected to raise levels of basic literacy, numeracy, technical skills and collaborative learning skills. The "XO" laptop is presented by OLPC as a tool for "learning about learning" and "learning by doing". Features of the laptop are:

- Low-cost, low power, low-maintenance laptop
- Designed to be extremely robust and long lasting
- Designed with collaborative applications (described as "activities") enabled through the mesh-networking capability of the device
- Designed to help improve basic, numerical and information literacy through the collaborative features and web access (when linked to an access point such as a DLC)

- Designed to be distributed directly to school-age children to be used outside and inside the classroom

The Ministry of Education, via DLCP, has been collaborating with regional organisations including the Secretariat of the Pacific Community (SPC) and USP to develop a regional plan linked to the Pacific Islands Forum's Digital and Youth Strategies, with SPC taking a lead role.

A series of trials have been proposed by the OLPC working group in order to test models and assumptions prior to a full-scale roll-out. The first of these trials will be run in The Solomon Islands, selected because of their experience in PF Net and the Distance Learning Project. Seen from the regional perspective, the Trials will help to justify and obtain appropriate funding that will allow the region to access the OLPC programme and a full scale roll out. Therefore, the concept has to be proven and demonstrated to work, and the OLPC Solomon Islands Trials are intended as a scientific test of the utility of the laptops and the models and assumptions and to answer questions on behalf of the region.

The Marovo Learning Network and One Laptop Per Child pilot project

The DLCP is collaborating with other regional organisations in an innovative pilot, that has the following objectives:

- To demonstrate how VSAT access can be extended to surrounding areas through terrestrial wireless coverage;
- To develop the TVET application of the DLCs;
- To run the proposed Solomon Islands Trials for the One Laptop Per Child (OLPC) project.

A link between Bekabeka DLC and Batuna Rural Training Centre (RTC) in Western Province has been identified as a good candidate for such a demo.

Firstly, the geography is suitable for wireless networking with villages scattered around the lagoon-side with good lines of sight. Secondly, connecting a major RTC with a DLC is also in line with the MEHRD's wishes that the DLCs serve continuing education and TVET. Thirdly, the DLCP has already trained an "online mentor" for TVET, Jerry Kenny, who is now the Deputy Head of Vanga Rural Teacher Training Centre. He was previously Principal of Batuna RTC and will therefore be a key resource person.

A number of organisations are collaborating with DLCP, Batuna RTC and the Marovo community in this project:

- SPC
- 2020 Communication Trust (New Zealand)
- University of Queensland (UQ), Marine Science Department
- USP
- Conservation International
- American Museum of Natural History
- Vanga RTTC / SIARTC
- Curriculum Development Centre

The Trials will be linked to various educational programmes including UQ's Biodiversity of Marovo Lagoon project, CI's project providing Marovo communities with alternatives to logging, and CDC's piloting of eBook material related to the curriculum.
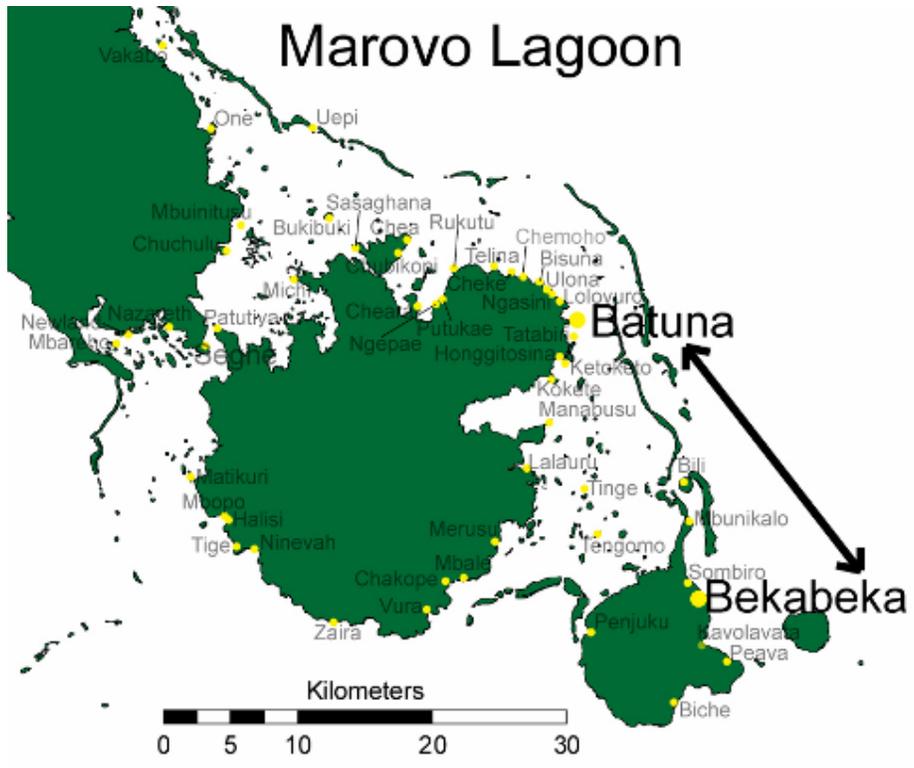
Location of the wireless link and OLPC Trials

At the time of writing, the wireless link is being completed and the Batuna community is mobilising for the project.

Girls testing an OLPC laptop connected wirelessly to the Internet at Henua DLC, Rennell

Addition of DLC sites using RICS

The Pacific Rural Internet Connectivity System announced by SPC allows additional DLCs to be established using their lower-cost VSAT solution, with it's smaller 1.2m dish. If the low-cost, low-power laptops described above are used instead of standard computers, the price of solar power is also greatly reduced. It is therefore possible to expand the network using more affordable models.

Community Radio

Small self-contained FM radio stations "in a suitcase" have been installed in several Pacific Islands locations, to be operated by communities using locally produced content and local language. These can be a very effective means of informing a mass audience. By adding a means of 2-way communication, content can be transmitted to the station from a central hub (i.e. provincial headquarters, NGO, media company, education provider) and feedback can be transmitted back to the hub. This, can be a powerful tool for development. One example of such a hybrid system is being implemented by UNDP in Isabel Province in the Solomons, where seven such community FM radio stations have been set up in combination with PFnet HF radio email stations. Other pilot sites exist in other PICTs including PNG and Vanuatu. This model could be replicated with the DLCs, which would be able to directly download audio content such as educational programmes produced by USP, NGOs, etc. They could also upload recorded local content for national consumption – improving the participation of the grassroots a voice at that level.

Findings and conclusions

Does Distance Learning have a role in our region?

Yes! It is clear from the arguments made here that in the globalizing world, education is not an exception. To maintain a role in the global economy, the Pacific Islands region needs to embrace DFL/ODL across their education systems to achieve efficiencies and connect learners with learning resources, across the region of scattered island populations.

Yes! The priorities of our education systems, the Millennium Development Goals and the data that suggests continuing intolerable rates of illiteracy and non-attendance demand that we use all possible means to improve access to quality education, and the need is especially great in remote and rural areas.

Yes! The case study given here is one example of how a carefully planned and managed approach can be manageable and sustainable – if planned and implemented carefully.

There is a very strong argument that more should be done to improve education access and quality, especially for the remote and rural communities where most of the population of many PICTs reside. Can we continue to tolerate a situation where so many of our children do not complete an education, and most people remain illiterate when affordable solutions are becoming more available? If we look to our children as our future and as the symbol of our hopes and aspirations the answer is a resounding NO!.

Recommendations

Ministers are invited to:

(i) request regional and international agencies to work closely with countries to:

      (e) share and replicate best practice and models for harnessing information and communications technology to improve access to quality education, especially for the remote and rural communities, especially through application of the distance learning mode;

      (f) consider introducing models for bridging the rural-urban digital divide in the region, using emerging and lower cost wireless, solar-powered and 'eco-friendly' last-mile solutions, with new VSAT technologies for infrastructure, and low cost laptop technology such as OLCP.

      (g) develop and share repositories of pertinent locally relevant information and education materials; and

      (h) design interventions involving ICT for educational use in remote areas to encourage synergy and partnerships that multiply the development impacts

(ii) Consider at the national level:

      (a) making electronic resources more available to schools.

      (b) introducing simple first steps in creating an eLearning content capacity into curriculum development in the region.

      (c) providing wider access to ICT training at all levels, leading to overall capacity development and awareness about ICT and education; and

      (d) encouraging coordination with national regulatory authorities to create national ICT policies that enable, rather than restrict, the full potential of modern Internet-based technologies and regional opportunities in improving connectivity for their education systems.

DLC, St. Stephen's College, Pamua, Makira

Arnon Atomea DLC, Malu'u, North Malaita

Avuavu DLC, Weathercoast, Guadalcanal
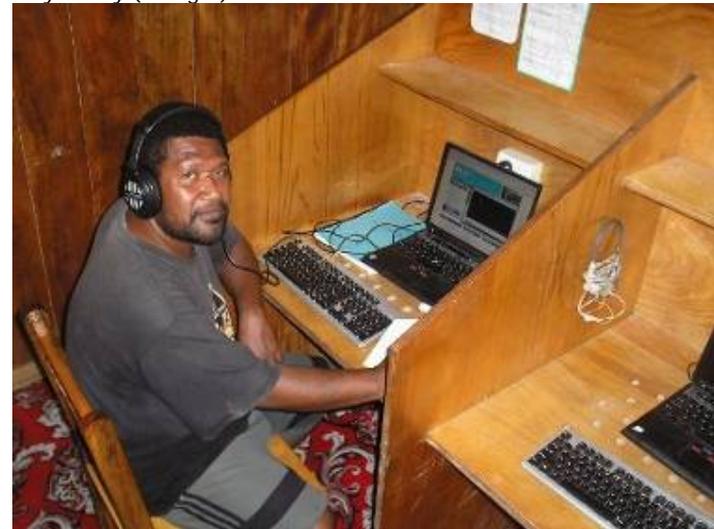

Henua DLC, Niupani, Rennell

Training for TVET teachers, Pamua DLC

Training in the use of synchronous tuition tools
Jerry Kenny (on right) has been selected as the online mentor for RTCs

Students viewing Google Earth to research land use patterns for a social science lesson

A teacher studying for his B.Ed course via USP

Acknowledgements