

The Evolution of Distance Learning and Factors Promoting ICT Use in the Pacific Islands: Focusing on the Possibility of E-Learning Opportunities for Higher Education

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Abstract

This paper outlined the status quo of higher education opportunities in the Pacific Islands and analyzed the factors required to expand it. According to the enrollment data of local universities and colleges, the local opportunities of higher education and e-learning conditions are different from country to country. Although the local governmental initiatives have played significant role to improve the opportunity, there is difference of availability of local opportunity of higher education. One of the factors of the difference is historical relationship with the ex-suzerain states. With advent of e-learning using Internet access and ICT technologies, the conditions of higher education opportunity is changing. The analysis of this paper indicates that there are emerging opportunities such as local initiative to expand e-learning courses and international movement to improve broadband access in Pacific Islands. To harness these chances, securing new linkages among stakeholders would be desirable as was in the past.

Key words: Pacific Islands, Higher education opportunity, E-learning, Internet, International Relationship

Introduction

Because of their geographical location and economic development status, the Pacific Islands have a lower rate of broadband access than do the metropolitan areas or developed countries. With the intent of increasing and improving broadband access in less developed countries and areas, the International Telecommunications Union (ITU) and the United Nations (UN) established a new international target in October 2010, which would expand broadband access to

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close to half the world's population by 2015. The two organizations also established goals for content development on broadband and the enhancement of Information Communications Technology (ICT) literacy (ITU 2010a).

The Pacific Islands still have limited access to higher education despite the fact that opportunities for the elementary and secondary educational systems are fairly broad, as a result of local efforts and international cooperation. On the one hand, the development and practice of new distance-learning technologies have become active in conjunction with broadband expansion mostly in developed countries, which means that two-way communication with multimedia functionality, via broadband access, can develop practical e-learning systems, which are more effective than traditional distance learning with only one-way broadcasting ability. This technical change of distance learning suggests the possibility that the improvement of broadband access could trigger significant higher educational opportunities to the people of the Pacific Islands.

Historically, the improvement of higher educational opportunities in the Pacific Islands has been achieved through intrinsic initiatives, with international cooperation and by support from ex-suzerain states. This cooperation and support have gradually evolved from the sharing of educational issues and challenges to the actual formation of classrooms. As Lindblom (1959) pointed out, actual policy issues are not simple enough to be applicable to theories; he mentioned that in most cases it is difficult to choose an "optimum solution" based on theoretical considerations of possible policy when numerous factors are intertwined with each other. Policy issues related to improving higher educational opportunities in the Pacific Islands were evolved through an "incremental process," where policy decisions were affected by various factors and small improvements were stratified.

An incremental approach is practical since it is applicable when the surrounding factors have changed. The technologies of ICT, the educational needs of countries in the Pacific Islands, and international circumstances are transformed day by day. Recently, many developed countries form a "national broadband plan" to upgrade to the next-generation network, and international organizations, such as the ITU (ITU 2010b), have advised other countries to follow the trend of formulating governmental plans or initiatives. As for the Pacific Islands, recent international attention to the digital divide problem could be the momentum needed to expand broadband access.

The change of conditions surrounding the Pacific Islands, in terms of broadband access, could affect higher education opportunities by introducing e-learning. Even though the e-learning system itself is an ever-evolving process, under trial and error in search of effective application for learners, ICT and the Internet are actually changing people's style of learning. Although the data and information on the Pacific Islands are limited, a "grossly incomplete analysis" would be a starting point to consider policy alternatives (Lindblom 1979). Therefore, this paper begins by illuminating the current level of higher educational

opportunities in the Pacific Islands. Next, the factors affecting higher educational opportunities are analyzed. Then, the paper examines how these opportunities would be improved with the expansion of broadband access and application of e-learning methods.

Status and Challenges of Higher Education Opportunities in the Pacific Islands

Status of higher educational opportunities

The data on educational opportunities in the Pacific Islands can be obtained using public information from UNECSO (2009). As shown in Chart 1, the data shows substantial opportunities for students in the primary and secondary education system in the Pacific Islands. However, the statistical data are incomplete and cannot provide the whole picture, especially regarding higher or tertiary education status. The net enrollment rate of primary and secondary education is 30% in the Solomon Islands and exceeded 90% in some countries. On the other hand, the data of the gross enrollment rate of tertiary education are not recent and not available in many countries. At most, the rate in Palau is 41%, and in several other countries, which have data, the rate is below 10%.

The Development of Higher Education Institutions

Chart 2 displays the major higher education institutions, such as universities and colleges, the main campuses of which are located in the Pacific Islands. In other words, the higher educational institutions could not be observed in eight countries (the Cook Islands, Kiribati, Nauru, Niue, the Solomon Islands, Tonga, Tuvalu, and Vanuatu) using public data retrieved in the scope of this research. Most of the institutions were established between the 1950s and the 1990s, under the support of local governments except the Pacific Adventist University, which was founded privately. The Fiji National University was founded in 2010, integrating the existing six colleges, the majority of which had been established much earlier, back in the 1960s.

Except for the University of the Southern Pacific (USP), the enrollments of these institutions are composed of local students, according to their web site information. The University of Guam accepted foreign students; however, the rate of that enrollment is 1% of all students¹. Only USP enrollment data of foreign students could be obtained during this research (see Chart 4 column 1), which means that the majority of these institutions, except USP, seen mainly dedicated to improving domestic opportunities of higher education.

Chart 1: Enrollment rate in the Pacific Islands (%)

P: Primary (Net), S: Secondary (Net), T: Tertiary (Gross)

Country, area	P 2000	P 2007	S 2000	S 2007	T 2000	HDI*	EEY**
Kiribati	109	113	99	88		0.624	12.1
Solomon Islands	85	101	20	30		0.51	9.1
Tuvalu	109	106	84			na	10.8
Tonga	108	113	101	94	5	0.704	13.7
Nauru	76	79	45	46		na	9.3
Vanuatu	114	108	34		4	0.617	10.4
Fiji	107	94	80	82	15 (2007)	0.688	13
Papua New Guinea	69	55			2	0.466	5.8
Samoa	99	95	78	81	7	0.688	12.3
The Cook Islands	88	73	66	73		na	na
Niue	93	95	78	81		na	na
New Caledonia						na	na
French Polynesia						na	na
Palau	113	99	86	97	41	0.782	14.7
The Marshall Islands	101	93	72	66	17	na	10.8
The Federated States of Micronesia (FSM)		110		91	14	0.636	12.1
The Northern Marianas Islands (NMI)						na	na
Guam						na	na
American Samoa						na	na

* Human Development Index

** Expected duration of education (years)

Source: UNESCO (2009).

Several institutions offer distance learning, and the online courses offered at the University of Guam and the University of Papua New Guinea cover a wide

Chart 2: List of major universities and colleges in the Pacific Islands

Country / Area	Name	Established	OC*	URL
Fiji	The University of the Southern Pacific (USP)	1968	○	www.usp.ac.fj
	The University of Fiji	2004	○	www.unifiji.ac.fj
	Fiji National University	2010	○	www.fnu.ac.fj
Papua New Guinea ²	The University of Papua New Guinea	1966	○ ³	www.upng.ac.pg
	The Divine Word University	1996	○ ⁴	www.dwu.ac.pg
	Pacific Adventist University	1997	–	www.pau.ac.pg
	Papua New Guinea University of Technology	1973	–	www.unitech.ac.pg
	University of Goroka	1997	△ ⁵	www.uog.ac.pg
Samoa	The National University of Samoa	1984	–	www.nus.edu.ws
New Caledonia	l'Université de la Nouvelle-Calédonie	1987	na	www.univ-nc.nc
French Polynesia	Université française du Pacifique	1987	○ ⁶	www.upf.pf
Palau	Palau Community College	1969	△ ⁷	www.palau.edu
Marshall Islands	College of the Marshall Islands	1991	– ⁸	www.cmi.edu
FSM	College of Micronesia-FSM	1963	○ ⁹	www.comfsm.fm
NMI	Northern Marianas College	1981	△ ¹⁰	www.nmcnet.edu
Guam	University of Guam	1952	○ ¹¹	www.uog.edu
American Samoa	American Samoa Community College	1970	na	www.amsamoa.edu

*Availability of online courses. Source: Website of the Universities, colleges etc.

○: Offers online courses, △: Under planning, –: Not offered, na: data was not available.

Source: Listed with the information from CAPPEX, USNews and various sources.

range of subjects; in addition, they include graduate-level courses. The Divine Word University offers both its own, original courses and courses in partnership with other educational institutions. As for the USP, the enrollment rate of distance-learning students is about 40% of around 10,000 students (JICA 2008). The USP was established by the initiative of 12 countries of the Pacific Islands, and distance learning with satellite communication started in 1972 (SPF 1995). The international cooperation among higher education institutions and loosely connected educational networks evolved from the 1970s to the 1990s.

Although these efforts have played a significant role in enhancing educational opportunities in the Pacific Islands, the technical changes of distance learning

and the limited bandwidth of satellite communication indicate the need for further measures to transform existing conditions. For example, USP enrollment indicates a decline since its peak in 2006 (JICA 2008).

Higher Education Opportunities and International Relations

Chart 3 shows the relationship between the Pacific Islands and ex-suzerain states (ExSS) and higher education opportunities. As shown in Chart 3, the relationship with ExSS seems to affect the opportunities of higher education. There are two patterns regarding higher education opportunities: First, USP encompasses the countries of the British-led Commonwealth of Nations, and these countries do not have universities or colleges. Second, the US-affiliated countries and areas do have local universities, which suggests that the aid from the US affects availability of local institutions.

Factors Affecting Higher Education Opportunities and E-Learning in the Pacific Islands

Higher Education Opportunities and the Effect of International Relationships

How do the above two patterns of international relationships affect the availability of higher education? Ideally, the quantitative comparison of aid volume, or budget of higher education, among the Pacific Islands would provide the evidence to explain the difference of these two patterns. However, although these data could be obtained in some countries, there would be missing values as in Chart 1. Instead, this paper adopts an alternative and simplified approach to compare opportunities of higher education through the use of enrollment data. The recent enrollment figures in higher education institutions in the Pacific Islands are disclosed (see Chart 4). The data have shortcomings, as enrollment figures do not indicate the portion of distance-learning students and, cover only the students attending the main higher education institutions. Even with these disadvantages, the basic data can be used for comparing and profiling the opportunities of higher education since they suggest the local opportunities in the Pacific Islands. The obtained enrollment data are the total enrollment figures from 2008 to 2011. The result of dividing the enrollment figures by the total population is referred to as Enrollment Population Ratio (EPR), which describes the quantitative opportunities of higher education in the Pacific Islands.

The other indices for comparison are GDP per capita purchasing power parity (PPP) adjusted, Internet penetration rates, and broadband subscription rates. These data explain the economic position and Internet usage in the Pacific Islands. With regard to bridging the status quo and future opportunities of higher education, it

would be preferable to use any measures that improve the situation. Additionally, it would be helpful to show where small steps can be taken; the next step toward improvement should be based on the opportunities that have already been achieved. For these reasons, this paper uses these data in the following section for analyzing factors affecting higher education opportunities.

Chart 3: Higher education opportunities and ex-suzerain states (ExSS)

Country/Area	USP	Local Univ.	ExSS
Kiribati	○		UK
The Solomon Islands	○		UK
Tuvalu	○		UK
Tonga	○		UK
Nauru	○		UK
Vanuatu	○		UK
Fiji	○	○	UK
Papua New Guinea		○	Australia
Samoa	○	○	NZ
The Cook Islands	○		NZ
Niue	○		NZ
Tokerau	○		NZ
New Caledonia		○	France
French Polynesia		○	France
Palau		○	US
The Marshall Islands	○	○	US
FSM		○	US
NMI		○	US
Guam		○	US
American Samoa		○	US

Source: USP, Chart 2 and E-Rate Central¹².

The Economic Situation and Higher Education Opportunities

Figure 1 shows the scatter diagram depicting the relationship between EPR and GDP per capita. The mark of ■ means that the countries are affiliated with the US and ● for French territories. The ▲ represents the USP participating countries.

Chart 4: EPR and Internet penetration rates

1) Enrollment of USP in 2008 (USP 2010), 2) Enrollment of Local Universities, 3) = 1) + 2)

Country/Area	1)	2)	3)	Population*	1) EPR	3)EPR	GDP**	Internet***	BB****
Kiribati	476		476	100,743	0.48%		6,200 (2010)	7.70%	0.90%
Solomon Islands	741		741	571,890	0.14%		2,900 (2010)	3.40%	0.37%
Tuvalu	91		91	10,544	0.91%		3,400 (2010)	40.80%	3.26%
Tonga	205		205	105,916	0.20%		6,100 (2010)	8.40%	0.96%
Nauru	20		20	9,322	0.21%		5,000 (2005)	3.20%	3.90%
Vanuatu	573		573	224,564	0.24%		5,100 (2010)	7.60%	0.13%
Fiji	7,975	20,000-24,999 ^{13(c)}	27,975	883,125	0.93%	3.28%	4,400 (2010)	16.50%	1.86%
Papua New Guinea		22,615(a)	22,615	6,187,591		0.33%	2,500 (2010)	2.00%	0.09%
Samoa	216	1,239(a)	1,455	193,161	0.12%	0.81%	5,500 (2010)	4.70%	0.11%
The Cook Islands	87		87	11,124	0.64%		9,100 (2005)	53.90%	8.26%
Niue	5		5	1,311	0.23%		5,800 (2003)	83.90%	0.00%
Tokerau	30		30	1,384	1.95%		15,000 (2003)	na	na
New Caledonia		3,000(a)	3,000	256,275		1.18%	18,000 (2004)	33.20%	15.23%
French Polynesia		2,922(b)	2,922	294,935		1.07%	8,100 (2008.)	40.70%	11.91%
Palau		726(a)	726	20,956		3.46%	2,500 (2008)	27.80%	1.14%
The Marshall Islands	44	1,500(a)	1,544	67,182	0.07%	2.49%	2,200 (2008)	7.20%	0.00%
FSM		2,760(a)	2,760	106,836		2.49%	12,500 (2000)	15.90%	0.90%
NMI		1,000(a)	1,000	46,050		1.14%	15,000 (2005)	34.70%	0.00%
Guam		3,639(c)	3,639	183,286		1.84%	8,000 (2007)	49.10%	1.67%
American Samoa		1,537(b)	1,537	67,242		2.26%	6,200 (2010)	4.50%	0.00%

The enrollment data is retrieved from various sources including the website of universities and colleges (a), Wikipedia (b), and the university information sites such as CAPPEX, USNews (c).

*Population in 2011. Source: Internetstatistics¹⁴.

**GDP per capita PPP. Source: CIA¹⁵.

***Internet user penetration rate in Nov. 2008 to June 2011. Source: Internet World Stats, Oceania and South Pacific..

****Broadband subscriber penetration rate in 2010. Source: ITU.

Papua New Guinea is shown as ◆. As Figure 1 shows, the difference of GDP per capita between the US-affiliated countries and the USP participating countries is not so large. However, the EPRs between those two groups differ significantly. The gap among the gross tertiary enrollment rates of Fiji (15% in 2007), the Marshall Islands (17% in 2000), and Micronesia-FMS (14% in 2000) seems small (as shown on Chart 1). It is consistent with the Figure 1 pattern because these countries have their own, local higher education institutions.

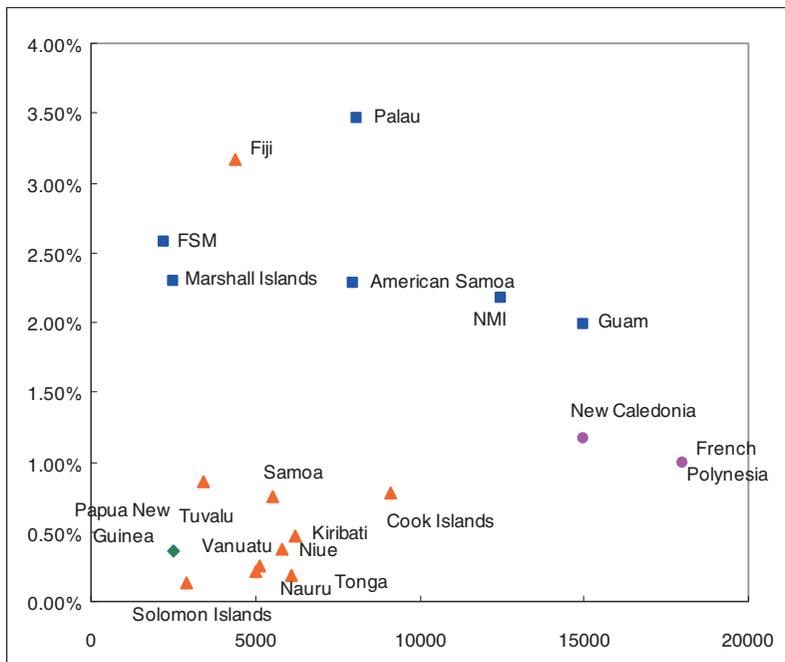


Figure 1: EPR (y-axis) and GDP per capita (x-axis)

The role of local universities and colleges seems to have a positive impact for improving opportunities of higher education in the Pacific Islands. The USP has contributed to countries without local higher educational institutions, particularly in countries with small populations. The change of the economic, social, and international situation, however, calls for further improvement of opportunities of higher education in the USP participating countries.

E-Learning Opportunities and Their Applicability to Higher Education

There are two possible ways to improve opportunities of higher education in the Pacific Islands: establishment of local education institutions and adoption of distance learning or e-learning, both of which have new possibilities as the surrounding conditions are changing. As for the former, the Asian emerging countries, such as China, are eager to expand their influence in the Pacific Islands. China has increased its amount of the finance loan, “Soft Loan,” to the Pacific Islands including Tonga, the Cook Islands, Samoa, Fiji, and Vanuatu (Fifita 2011). The latter one has the possibility of expanding broadband access through the deployment of network infrastructure and emerging e-learning systems.

Figures 2 and 3 show the relationship between EPR and penetration rates of Internet users and broadband subscribers. Some countries, such as Tuvalu, Niue, and the Cook Islands, achieved higher Internet penetration rates than the US-affiliated countries. Internet access availability and EPR seem irrelevant, according to these figures, which would suggest that the introduction of the e-learning system could be a taking “small steps” to achieve a “drastic alternation of the status quo”

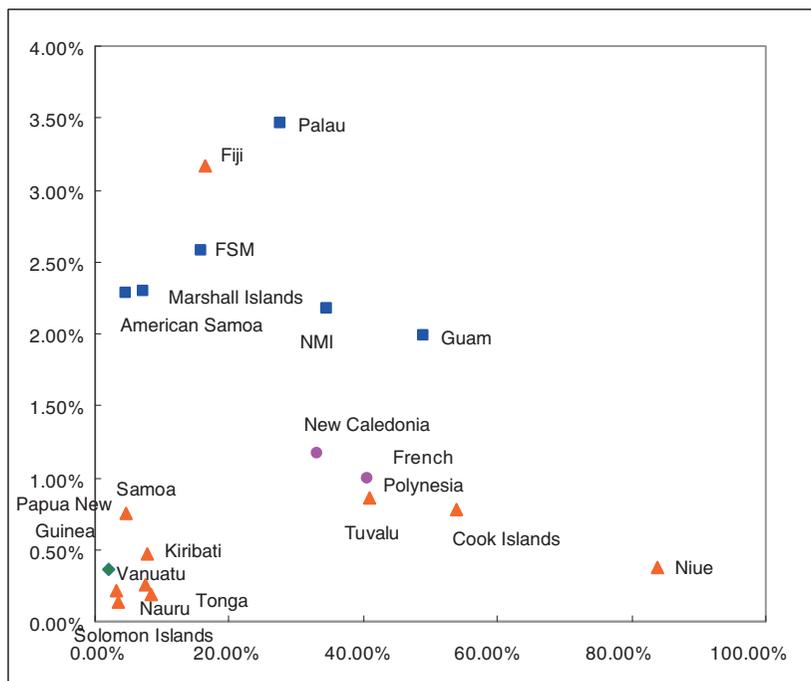


Figure 2: EPR (y-axis) and penetration rates of Internet users (x-axis)

(Lindblom 1979), by taking relevant actions to meet requirements for e-learning adoption. This possibility will be discussed in the next section.

The Changing Conditions of E-Learning in the Pacific Islands

Three Conditions Necessary for the Expansion of E-Learning Adoption

Accessibility of distance learning has more impact on rural areas than metropolitan ones. The introduction of e-learning will be successful when three conditions are met in terms of demand, hardware (domestic Internet access and international broadband gateway), and software (human capital, teachers and course materials).

First, the demand for higher education opportunities is indispensable. This paper employs secondary, net enrollment rates as a substitution for index of demand. Next, the additional index of demand is GDP per capita, as it represents the financial ability to afford higher education. Where the GDP per capita is low,

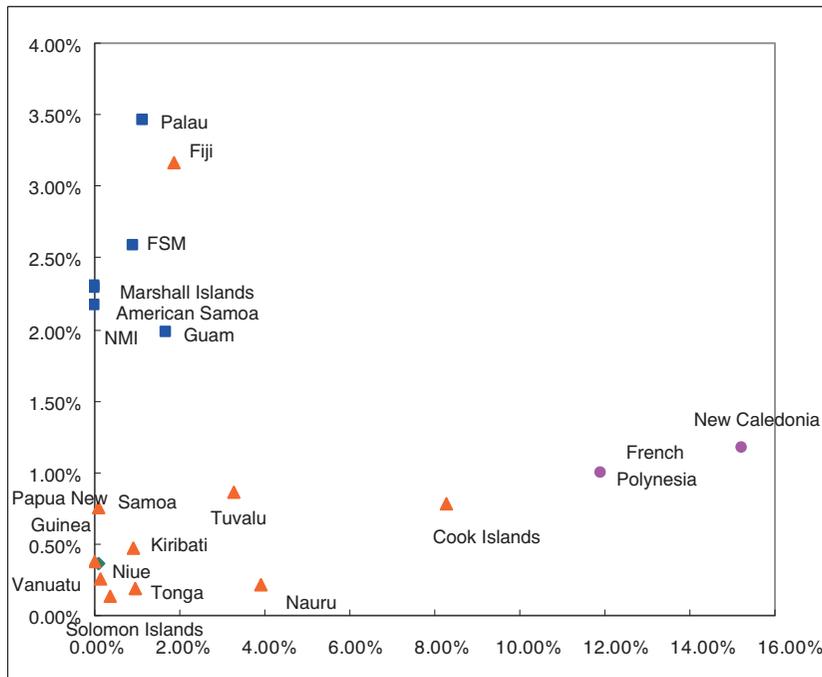


Figure 3: EPR (y-axis) and penetration rates of broadband subscribers (x-axis)

the demand for affordable higher educational opportunities is higher than in richer countries, where people have many choices including distance learning, local institutions, and studying abroad.

Second, Internet access and the existence of the international gateway to the global Internet affect the e-learning experience. If a country has sufficient bandwidth with a submarine cable broadband connection and high-speed network in the territory, students can engage in e-learning opportunities, not only in their own country but in foreign countries, as well. In addition to these formal educational opportunities, students can access the informal educational offerings provided by various institutions. Meanwhile, if a country has a good international connection, yet a poor local network, e-learning opportunities will be fairly restricted. In comparison, when a country has a well-developed local Internet infrastructure with limited access to the international gateway, e-learning will be formal, employing asynchronous communication for international access; however, improvement of e-learning is possible in that situation. This paper employs the accessibility of a submarine cable infrastructure for the international access index and the penetration rates of Internet users for the local access index.

The last condition concerns software factors. Teachers and content developers who have expertise in e-learning determine the effectiveness and quality of the e-learning experience and outcomes. Although e-learning professionals are not plentiful enough even in developed countries, university and college teachers seen the most qualified and responsible for improving higher education opportunities. Therefore, the existence of local educational institutions and the availability of distance learning or e-learning courses are considered to be the software factor of e-learning.

Changing Conditions of E-Learning Feasibility

The above conditions of e-learning feasibility are affected by external and internal factors. The external factors are the new opportunities for broadband access via submarine cable and satellite communications. The internal ones are the initiatives of universities and colleges to expand their e-learning programs. Currently, the hybrid style, combining e-learning and classroom study, is prevailing because of its flexibility and educational effectiveness. The standardization of the e-learning platform into three major systems (Moodle, Sakai, and Blackboard) also affects the incentive to introduce an e-learning system. Moodle and Sakai are open source platforms, and the educational materials of these three platforms are compatible with one another with some conversion.

a. Change of hardware conditions: submarine cable and satellite broadband

The introduction of the international Internet gateway via submarine cable can fundamentally improve the Internet connection quality. The disincentive of cable submarine deployment is its cost; therefore, a deployment plan of submarine cable usually accompanies the financial aid or arrangement with global enterprises and/or financial institutions. A plan to connect Tonga and Fiji with submarine cable successfully proceeded after gaining financial arrangements from the Asian Development Bank and World Bank in July 2010 (ADB 2010).

The other option to improve broadband access in the Pacific Islands is satellite communication. Although satellite communication has been dominated by a few satellite companies, the new entrants, such as O3b, into the Pacific area are bringing new choices of broadband access along with cheaper connection fees (O3b 2011). In addition to commercial services, the ultra-high speed broadband experimental satellite, WINDS, was launched in 2008 by the Japan Aerospace Exploration Agency (JAXA) (JAXA 2008). As WINDS has the capability to provide service to the Pacific Islands, the Japanese government is considering the possibility to use WINDS for the purpose of international cooperation.

b. Change of software side conditions: development of e-learning courses

In Papua New Guinea, under the influence of Australia, the development of e-learning courses has been quite active. For example, the Divine Word University offers various online diploma courses, certification courses, and degree courses¹⁶. The courses are fairly comprehensive, compared to the 13 online courses offered by the Guam University. In other countries, such as Palau and the Marianas Islands, e-learning courses are in the planning stages at several universities. In comparison, the distance-learning project using Satellite PRELStar, which began in 1997, completed its role in 2006 (PREL na). Distance learning is shifting to online learning, in accordance with the growing popularity of the Internet.

The Need for “Small Steps” and Networking of Stakeholders For Sustainability

Chart 5 summarizes the indices of the three required conditions for the expansion of e-learning. The bolded \triangle means changing conditions from around 2010-2011. The other bold characters indicate an advantageous status compared to other Pacific Islands countries. Chart 5 shows that the use of e-learning for the expansion of higher education opportunities requires meeting the conditions that are different in each country. In such situations, the “small steps” approach would be the realistic one.

Chart 5: Indices of e-learning conditions

Country / Area	Demand	Hardware side		Software side	
	S 2007	Net(Local)	Cable (International)	Local Univ.	OC
Kiribati	88	7.70%			
The Solomon Islands	30	3.40%			
Tuvalu	84(2000)	40.80%			
Tonga	94	8.40%	△		
Nauru	46	3.20%			
Vanuatu		7.60%			
Fiji	82	16.50%	○	○	○
Papua New Guinea		2.00%	○	○	○
Samoa	81	4.70%	○	○	△
The Cook Islands	73	53.90%			
Niue	81	83.90%			
New Caledonia		33.20%	○	○	
French Polynesia		40.70%	○	○	○
Palau	97	27.80%		○	△
The Marshall Islands	66	7.20%	○	○	
FSM	91	15.90%	○	○	○
NMI		34.70%		○	△
Guam		49.10%	○	○	○
American Samoa		4.50%	○	○	

Source: Chart 1, 3 and 4. TeleGeography for Cable (International) ¹⁷.

Since any resources concerning higher education are limited in the Pacific Islands, the cost-effectiveness for sustainability and continuity would be a key factor in expanding opportunities for higher education. Hence, cooperative course development and sharing courses would be an option for cost-effectiveness. To fulfill this purpose, there would be many possible measures from virtual networking using social networking services to establishment of special institutions dedicated to online education expansion. The combination of existing educational resources and newly developed technologies also has the possibility to upgrade the distance learning to online learning.

Those choices and measures have some value for improving opportunities of higher education if they combine demand, hardware, and software, but any of them alone would not be effective enough for drastic and immediate improvement of the situation. However, networking efforts to connect supply and demand at times would reach “tipping points” to achieve a drastic alternation, which would go beyond the threshold level.

Discussions and Conclusions

This paper outlined the status quo of higher education opportunities in the Pacific Islands and analyzed the factors required to expand it. Since the local opportunities of higher education and e-learning conditions are different from country to country, the measures to improve then will vary as well.

The initiatives of the Pacific Islands’ countries by themselves have been major factors for improvement. The cooperative and networked action among the Pacific Islands have also brought additional educational opportunities, even in the least developed countries by adopting distance-learning technology, as seen in the USP case. However, as the size of the Pacific Islands is relatively small, the support and aid from developed countries, especially ex-suzerain states, affects the financial sustainability of higher education. Multilateral cooperation has also played a significant role in improving higher education opportunities in the Pacific Islands. For example, the USP has used USPNet, which was launched as an experimental satellite by the US in 1971. The USPNet has been supported by not only the US but also Australia, New Zealand, and Japan since the 1990s. Chart 6 classifies the support patterns for the improvement of higher education opportunities in the Pacific Islands.

Chart 6: Support patterns for the improvement of higher education opportunities

Stake holder	Relationship	Type
The Pacific Islands Initiative	Single country	Stand-alone type (e.g., Local Univ. and colleges)
	multilateral	Relationship type (e.g., USP)
International	bilateral	Supportive type (e.g., US-affiliated countries)
Cooperation	multilateral	Aid type (e.g., USPNet)

In reality, these support patterns are not independent but are intertwined with each other. Higher education opportunities have widened through various links among stakeholders; therefore, any measure cannot be realized without consideration of establishing new links among stakeholders by “small steps” as in the past.

NOTES

1. From the website of International STUDENT.com.
Available: <http://www.internationalstudent.com/school-search/1126/usa/guam/university-of-guam>
2. There is a plan to establish a new university, named “The Lutheran University of Papua New Guinea” in 2013 according to the web site of lupng.org.
3. From the website of University of Papua New Guinea.
Aveilable: http://www.upng.ac.pg/sch-crs_home.html
4. From the website of The Divine Word University .
Aveilable: <http://www.dwu.ac.pg/faculties/ffl/facultyoffl.html>
5. From the website of the University of Goroka.
Available: <http://www.uog.ac.pg/information/dfl.html>
6. From the website of Université française du Pacifique.
Aveilable: <http://www.upf.pf/-E-learning-services-.html?lang=fr>
7. They offer the online course under the partnership with Thomson Education Direct.From the web site of Palau Community College.
Available: <http://www.palau.edu/specialprg.htm>
8. From the website of CAPPEX.
Available: <http://www.cappex.com/colleges/College-of-the-Marshall-Islands-376695>
9. From the websie of CAPPEX.
Available: <http://www.cappex.com/page/collegeProfile/modularProfile.jsp?id=243638&collegeID=243638#>
10. From the newsletter published by Northern Marianas College.
Available: http://www.nmcnet.edu/content_proanews.php?idref=51&PHPSESSID=pfulcmigbriqdb
11. From the website of University of Guam.
Available: <http://campus.uogdistance.com/>

12. Available: <http://www.e-ratecentral.com/default.asp>
13. The number is from University information service website 4icu.
Available: <http://www.4icu.org/reviews/12961.htm>
The number of enrollment does not include the enrollment of the University of Fiji.
14. Available : <http://www.internetworldstats.com/pacific.htm>
15. Available: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html>
16. From the website data of the Divine Word University.
Available: <http://www.dwu.ac.pg/forms/DWU%20Hand%20Book.pdf>
17. Available: <http://www.telegeography.com/telecom-resources/submarine-cable-landing-directory/index.html>

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